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COMPUTERWORLD

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NEWSPAPER

IBM stakes claim to next PC standard

OS/2 to bind PCs to hosts, leap 640K wall

BY PEGGY WATT
CW STAFF

Ending more than a year of industry uncertainty, IBM last week announced a graphics-oriented operating system that builds on Microsoft Corp.'s Windows, serves as a major component of IBM's Systems Application Architecture and, in some releases, adds a built-in gateway to minicomputer and mainframe environments.

IBM will offer two versions of the operating system. The Extended Version includes a relational data base system said to be consistent with DB2, an implementation of Structured Query Language and a version of Query Management Facility for end-user query and report writing. The Extended Edition of Operating System/2 also provides terminal emulation capabilities, applications development facilities for Dialog Manager, IBM Systems Network Architecture local-area network gateway support, Enhanced Connectivity Facility support and Advanced Program-to-Program Communications and 5250 workstation emulation.

Full Report

Communications products; Microsoft announcement; reaction of MIS, industry; and more. Pages 107-110.

These features are not expected to be immediately available on IBM's competitors' products. The release date of the Extended Version will not be announced until the fourth quarter. The standard version, which will not include these advanced features, is set to ship early next year.

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Bus, disk changes anchor feature-packed systems

BY ED SCANNELL
CW STAFF

NEW YORK — IBM attempted to regain control of the corporate microcomputer standard last week by announcing a formidable array of systems-oriented microcomputers and operating systems software.

The company showcased eight configurations of its Personal System/2 series, including three systems based on the Intel Corp. 80386 processor, that are called the Model 80s and are closely linked through enhanced communications abilities. IBM's systems approach to microcomputing is intended to entice MIS executives to stay within the IBM product fold rather than buying less expensive compatibles.

In addition to the three 80386-based systems, the series consists of two Intel 80286-based computers — a desktop and a floor-mount system — called the Models 50 and 60, respectively, and an Intel 8086-based machine called the Model 30.

The 80286- and 80386-based systems, some of which are aggressively priced (see chart page 109), employ a proprietary, high-speed bus design called the Micro Channel, which allows the systems to run between two and 3½ times faster than the company's current microcomputer line. All systems have built-in 3½-in. floppy disk drives and a full complement of serial and parallel ports, high-resolution graphics adapters and memory built into the motherboard.

An optional write-once-read-many optical disk drive, an

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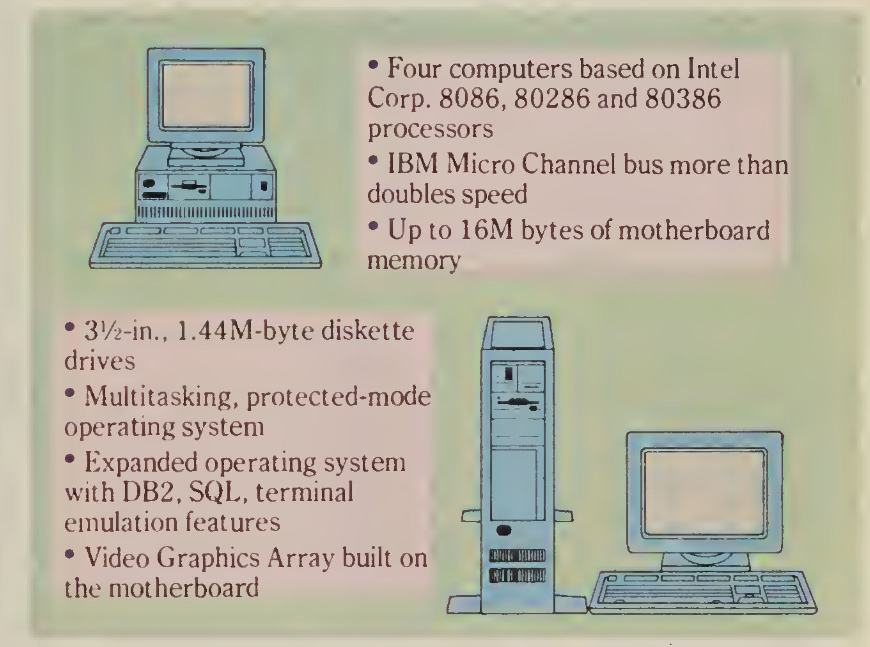
Announcement highlights:



- Four computers based on Intel Corp. 8086, 80286 and 80386 processors
- IBM Micro Channel bus more than doubles speed
- Up to 16M bytes of motherboard memory
- 3½-in., 1.44M-byte diskette drives
- Multitasking, protected-mode operating system
- Expanded operating system with DB2, SQL, terminal emulation features
- Video Graphics Array built on the motherboard

CW CHART: MITCHELL J. HAYES

CSA revamp seen luring sites back to IBM service

BY STANLEY GIBSON
CW STAFF

RYE BROOK, N.Y. — Landing a strong blow against third-party maintenance providers, IBM last week revamped its Corporate Service Amendment, offering 24-hour Monday-through-Sunday maintenance at no additional charge for those customers under the agreement.

The enhanced service plan offers a windfall of other benefits to users and appears aimed at getting as many customers as possible to sign up for IBM maintenance with CSA, an addendum to the IBM maintenance agreement.

The new discount agreement includes a five-year CSA option with additional 5% savings and eliminates termination charges when several months' notice is given. In addition, should maintenance costs for a piece of equipment under CSA increase more than 7% in any year of the contract period, a customer may withdraw from the contract without a termination charge. Previously, the allowable annual percentage increase was 7% the first year, 14% the second year and 21% the third year.

Further, should a customer's total maintenance bill increase by more than 3.5% in any year, the customer may withdraw from CSA without penalty. The changes are set to become effective June 1.

Even users who do not have CSA were handed the gift of a 15% price reduction on extra 24-hour seven-day maintenance. Monday-through-Friday 24-hour service was reduced from a 24% to a 15% additional charge.

The changes to the CSA program came some six months after the announcement of CSA's

Continued on page 8

Telenet deal merges T1, packet nets

BY ELISABETH HORWITT
CW STAFF

LAS VEGAS — Well ahead of the coming of Integrated Services Digital Network, U.S. Sprint Communications Co. and Telenet Communications Corp. are offering products with which, they claim, MIS managers can immediately start meshing packet-switched and T1 equipment into an integrated network system.

Telenet announced at the Interface '87 conference here last week that it had signed a five-year contract to purchase Timeplex, Inc.'s Link family of T1 networking equipment. At the same time, Telenet released the first product offerings to help users mesh its own packet-switching equipment and services with

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DBMS debuts. Cullinet develops IDMS/SQL for mainframes, departmental and personal computers and plans to provide networking capabilities across the three platforms. Page 6.

Marching to the Big Blue beat. Microsoft keeps in step as it mirrors IBM's DOS release and modifies Windows for adoption as IBM graphical interface. IBM's Solutionpac desktop personal publishing system takes advantage of PC processing speed. Pages 107, 108.

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6 Software package allows PCs to use LU6.2 protocols to access mainframe.

8 CDLA worries that IBM Credit has potential to harm third-party leasing industry.

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12 DEC president criticizes technical features, slow progress of GM's MAP.

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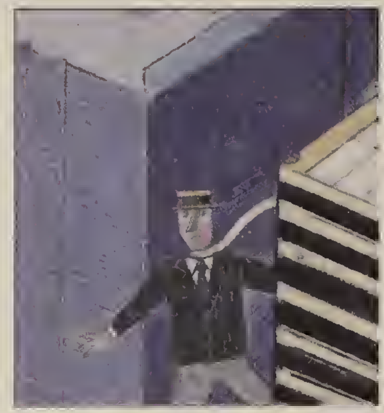
110 Orchid Technology says third-party add-in RAM memory card is a first.



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"All the hardware is now being redesigned around a software strategy."

SUSAN BORDEN
IBM REPRESENTATIVE

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MIS helps set IBM's product direction

BY CLINTON WILDER
CW STAFF

ORLANDO, Fla. — Lines of communication between IBM's internal MIS operation and its commercial software developers have opened in recent years, according to Frank Palm, manager of information systems at IBM's White Plains, N.Y., data center. The changes are leading IBM product development efforts in directions that are more responsive to MIS needs.

"The developers are understanding that I'm an important sounding board, particularly in office systems," said Palm, a panelist at last week's biannual ADAPSO Management Conference held here.

"To the extent that a product meets my needs, it should meet the company's customers' needs," Palm added. "I can get access to the latest and best releases and use them when it makes good business sense."

For contracted professional services, however, Palm said both he and IBM's professional services unit choose to remain at arm's length. "They would prefer not to do business with me," he said. "Their feeling is that we're not a real customer, and they would rather go after a real customer."

The White Plains data center, running 15 IBM mainframes and employing 450 people, supports IBM's Armonk, N.Y., corporate headquarters and several other divisions. Like MIS executives in large user companies, Palm said end-user education is high on his priority list. He has converted a host of employees from systems to education-related functions.

Palm added that he much prefers his customers to use off-the-shelf software packages, including those from non-IBM vendors, rather than develop new software or modify packages in the MIS department.

Users within IBM can utilize an on-line order system for off-the-shelf micro applications from MIS, and Palm said most existing office systems software can be installed within 30 days, compared with the several months or more needed to write or modify an application.

DEC settles patent suit

Grants System Industries license to make drives

BY NINAMARY BUBA MAGINNIS
CW STAFF

MAYNARD, Mass. — In an out-of-court settlement last week, Digital Equipment Corp. gave Milpitas, Calif.-based System Industries, Inc. a license to manufacture certain cartridge, disk and tape drives that incorporate DEC's patented computer interconnection and control technology.

In return, System Industries will pay DEC an undisclosed amount in royalties for System Industries' past and future sales of such peripheral devices, a DEC spokeswoman said.

The licensing is part of a settlement that ended all pending litigation between the two companies, the spokeswoman announced.

DEC initiated litigation in 1980 when it filed an action against System Industries in U.S. District Court in Boston alleging that certain System Industries products infringe various patents on its System Backplane Interconnect, Unibus and Q-bus technologies.

Last July, System Industries filed a separate suit against DEC in U.S. District Court in San Jose, Calif., alleging that DEC's patent enforcement and marketing practices violate federal antitrust laws.

The settlement protects DEC's ownership and rights while reinforcing the hardware vendor's position against other third-party firms, said Stephen Smith, vice-president at Paine Webber, Inc.

Although details of the settlement were not disclosed, the infringements include System Industries' Series 2001 cartridge drive, Series 9400 and 9500 disk drives and Series 9700 tape drives, DEC said.

While System Industries refused to comment on products affected by the licensing policy, a company spokesman said the settlement will not increase prices. Royalty payments to DEC would not hurt the business, either.

"It's not going to have material impact on the bottom line. I can't really disclose specific terms of the settlement, obviously, because that was stipulated in the agreement. But that sum of money is trivial compared to the number of dollars that would be spent in continuing litigation," noted Dan Post, System Industries' director of marketing communications.

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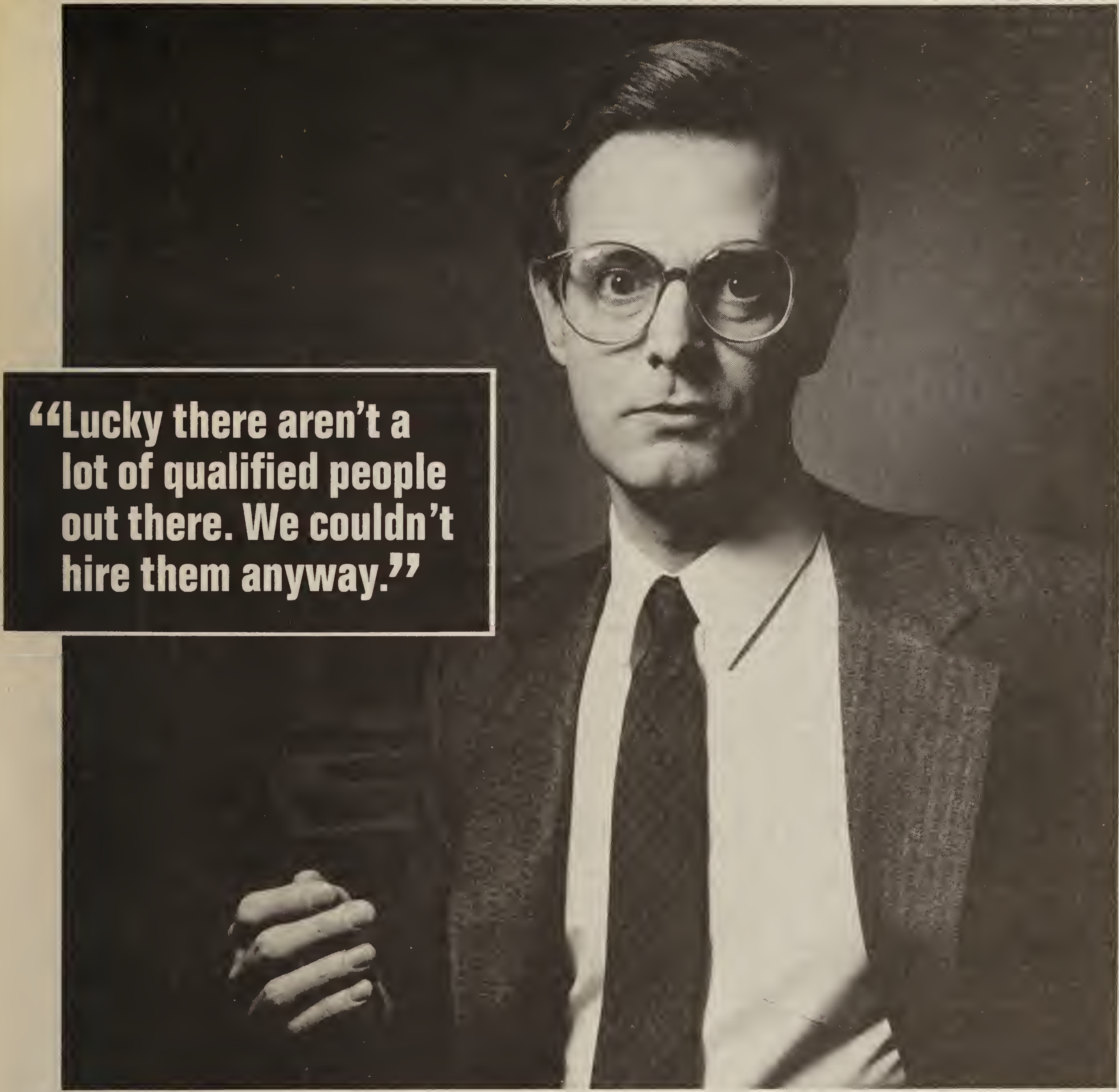
"Lucky there aren't a lot of qualified people out there. We couldn't hire them anyway."

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GSA eyes upgrade of federal inventory

BY MITCH BETTS
CW STAFF

WASHINGTON, D.C.— Federal officials last week announced wide-ranging plans for upgrading the federal government's inventory of obsolete computer systems and for hanging on to good data processing personnel.

The modernization plan will streamline procurement processes that currently take three to eight years for major systems, put a single manager in charge of each major system acquisition and reform personnel practices. The plan was unveiled by the U.S. General Services Administration (GSA), which establishes federal DP policies.

Terence C. Golden

The GSA also announced that it will be more aggressive in obtaining better lease-financing terms for government systems and will use new congressional authority to arrange five-year leases, instead of costly one-year leases.

Terence C. Golden, the GSA administrator, said the federal government lags behind the private sector in the application of information systems. On the average, a federal computer system is about 10 years old, more than twice the age of systems in Fortune 500 companies, the GSA reported.

Behind state-of-the-art

Golden said the government's long acquisition process results in systems that are a generation behind state-of-the-art. "We need to address the problem of computer obsolescence because federal programs and services to taxpayers depend upon the use of modern information technology," he said.

The GSA had previously announced a program, called "Go for 12," to cut the time needed to procure major systems to 12 months [CW, Sept. 22, 1986]. Golden said the process now takes an average of three years, with some major systems taking eight years.

Golden announced that in addition to the "Go for 12" program, the GSA will implement a "trail boss" program, in which agencies will assign one person with the responsibility for ensuring a project's timely and cost-effective delivery.

A recent GSA study indicated that one problem with government systems acquisition is that the responsibilities are fragmented among DP, procurement, budget and other offices.

Another component of the modernization program is an effort to combat the government's problems in attracting and retaining skilled DP personnel.

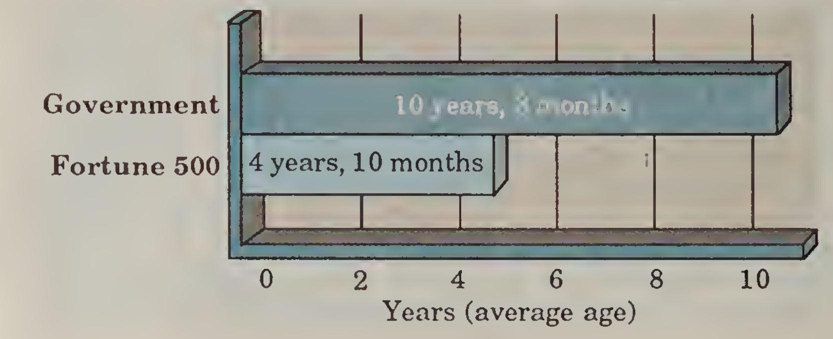
Golden said the GSA and the U.S. Office of Personnel Management intend to raise the pay scale for DP employees, create a DP career path and start a certification program.

Golden said the Reagan administration has identified 17 major information systems that will get high priority in federal budget battles to assure they get sufficient funding for completion.

The priority systems include the Internal Revenue Service's tax processing system, the Social Security Administration's modernization program, the Federal Telecommunications System and the Bureau of the Census.

Aging government systems

Average age of government agencies' computer systems far exceed those of private industry



INFORMATION PROVIDED BY U.S. GENERAL SERVICES ADMINISTRATION
CW CHART: SUSAN ALDAM

DCA ruling may have Lotus impact

BY ALAN J. RYAN
CW STAFF

ATLANTA — A ruling here last week in a dispute involving software copyright protection was quickly seized as a precedent by both sides in a similar suit filed by Lotus Development Corp.

In the ruling, U.S. District Court Judge William O'Kelley upheld Digital Communications Associates, Inc.'s (DCA) suit against Softklone Distributing Corp. in Tallahassee, Fla., for copyright infringement involving DCA's Crosstalk XVI personal computer software.

The ruling prohibits Softklone from distributing its Mirror software, which DCA said violated the copyright of certain aspects of Crosstalk, until Softklone changes one screen and its documentation.

Precedent favorable

Attorney Henry Gutman of O'Sullivan, Grave & Karabel in New York, who is representing Lotus in its suits against 1-2-3 clone makers Mosaic Software, Inc. and Paperback Software International, Inc., said the ruling in Atlanta is favorable for his client. "We essentially feel that if Crosstalk won its case, we should win ours," he said.

Gutman said Lotus has an even stronger case, in terms of the type and degree of copying, than what was involved in the Crosstalk case. "The copying in our cases is more extensive than just a single screen. [Mosaic and Paperback Software] have copied a wide array of things from 1-2-3, so changing a single screen wouldn't solve the problem," he said.

But the attorney for Mosaic disagreed. "The court stated loudly and clearly that copyright on a computer program does not grant rights in the screen images generated by the program," said Thomas Hemnes of Foley, Hoag & Eliot in Boston. His client produces The Twin and Integrated 7, two of the alleged infringing programs.

> "THE COURT stated loudly and clearly that copyright on a computer program does not grant rights in the screen images generated by the program. . . . I don't think there's anything left of [Lotus's] case."
>
> THOMAS HEMNES
> FOLEY, HOAG & ELIOT

"Second, the court said that a copyright on the arrangement and design of the status screen does not grant the plaintiff control over, among other things, the use of particular command terms or symbols," Hemnes added. "In my view, if you've cut out the status screens . . . and the names it gives to its commands, I don't think there's anything left of [Lotus's] case."

Paperback Software founder Adam Osborne agreed. "This decision puts Lotus's suit in deep trouble. My own feeling is that [the Crosstalk suit] enormously strengthens our position," he said. In last week's ruling, DCA was not awarded damages, pending other litigation with Softklone.

"We are very pleased that the suit was determined in our favor," said Jim Ottinger, president of DCA's personal computer communications group. "The court has validated our contention that the user interface and the appearance of a product is a vital element of the product and is protectable by U.S. copyright law."

Softklone said last week it will write a new version of its software to delete the screen — one of 125 screens — deemed by O'Kelley to be nearly identical to a screen on Crosstalk.

The new software should be out by April 15, according to Howard Huff, Softklone's president.

Appeal on horizon

Huff said that although his company will comply with the ruling for now, it has filed for an appeal. "We are in the cloneware business, so any lawsuits that go against cloneware could negatively affect us in the long term. . . . We will follow our legal remedies until we exhaust them because we think it's both important to what we want to do and to our corporate image," he said.

Huff said his company disagrees that the screen in question is not a form screen.

"Screens that give you specific instructions on doing things are copyrightable. The Crosstalk screen has none of that," he said.

Huff said DCA originally filed litigation charging Softklone with unfair trade practices and trademark misuse in addition to the copyright issue.

Those charges were separated from the copyright issues and will be addressed at a later date.

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Cullinet plans SQL-based line

BY CHARLES BABCOCK
CW STAFF

WESTWOOD, Mass. — Cullinet Software, Inc. told its customers last week in a coast-to-coast teleconference that it plans to offer an SQL-based data base management system for mainframes, departmental computers and personal computers.

Cullinet said it will also soon offer an expert system development environment for the Digital Equipment Corp. VAX, with a later version aimed at allowing Cullinet customers to embed expert systems in their mainframe Cobol applications, according to John Landry, chairman of Distribution Management Systems, Inc., the Lexington, Mass., firm in the process of being acquired by Cullinet. Landry will reportedly be named a Cullinet executive vice-president when the deal is completed.

Cullinet Executive Vice-President David Litwack said Cullinet is on schedule in delivering a relational DBMS for the VAX, called IDMS/SQL, in September. Within months after the VAX release, he said, Cullinet will offer a version of IDMS/SQL that will run under VM on the IBM 9370 low-end mainframe and departmental processor. No pricing has been set for the products.

A personal computer version of IDMS/SQL is also being developed, and Cullinet plans to provide networking capabilities for a distributed data base across the three platforms, Litwack said. No price or date of availability was set for the PC product.

Modifying IDMS/R

In addition, Cullinet extended its commitment last fall to provide SQL query capabilities for IDMS/R, its mainframe DBMS, to include the same SQL data access and updating functions as will be found in IDMS/SQL. The full SQL capability will be found in the next release of IDMS/R. The current release, 10.2, is finishing beta tests.

Cullinet also announced that a number of VAX applications are available immediately as a result of acquisitions. One, a set of contract monitoring and reporting packages for firms that do business with the government, was derived from the acquisition of Planning Control International, a Newport Beach, Calif., firm, in December 1986. The packages will keep their existing names — Easy Trak, Easy Bids and Performance Management. Pricing is still being set.

Another VAX application is a six-module repetitive manufacturing system acquired from Computer Strategies, Inc. in Grand Rapids, Mich. The modules retail for $70,000 to $100,000 and require the Pick operating system.

Telenet deal

FROM PAGE 1

a T1 network based on Timeplex's switches and parent U.S. Sprint's dedicated T1 lines.

Telenet's Integrated Digital Network offering is a network based on Timeplex Link/2 T1 switches that can be linked via U.S. Sprint's fiber-optic digital network. Resold by Telenet as the TP7/I, Timeplex's T1 switch is available now from Telenet, priced at between $25,000 and $100,000, the company said.

The agreement with Timeplex will further U.S. Sprint and Telenet's goal of becoming a "leading single-source provider, worldwide, of telecommunications and services," said John Holmblad, Telenet vice-president of Network Systems. Telenet offers packet-switching services as well as equipment for private packet-switched networks. U.S. Sprint offers telecommunications services, including dedicated digital T1 circuits, over its optical-fiber backbone facilities.

Telenet also announced that it has enhanced its TP5/II-5003 Transmission Management System to provide the network manager with access to both Telenet's and Timeplex's network management systems. Transmission Management System continually monitors the operation of either a T1 or packet-switched network, or a combination of the two, records alarm conditions and maintains a network-status data base.

Telenet said it plans further integration of the two equipment lines' respective network management systems, which may include a hookup to IBM's Netview network management system, Holmblad said. Timeplex was one of the earliest equipment vendors to announce intentions to link up with the Netview/PC interface.

Customers can now link Telenet's T1 and packet-switching equipment together to form hybrid voice/data networks, according to Holmblad. For example, the TP7/I T1 multiplexer can be hooked up both to a private branch exchange for local voice distribution and to a Telenet packet switch, he suggested. The packet switch can then send data packets over one or more 64K bit/sec. subchannels of a T1 dedicated link that runs on U.S. Sprint's fiber-optic backbone (see diagram left).

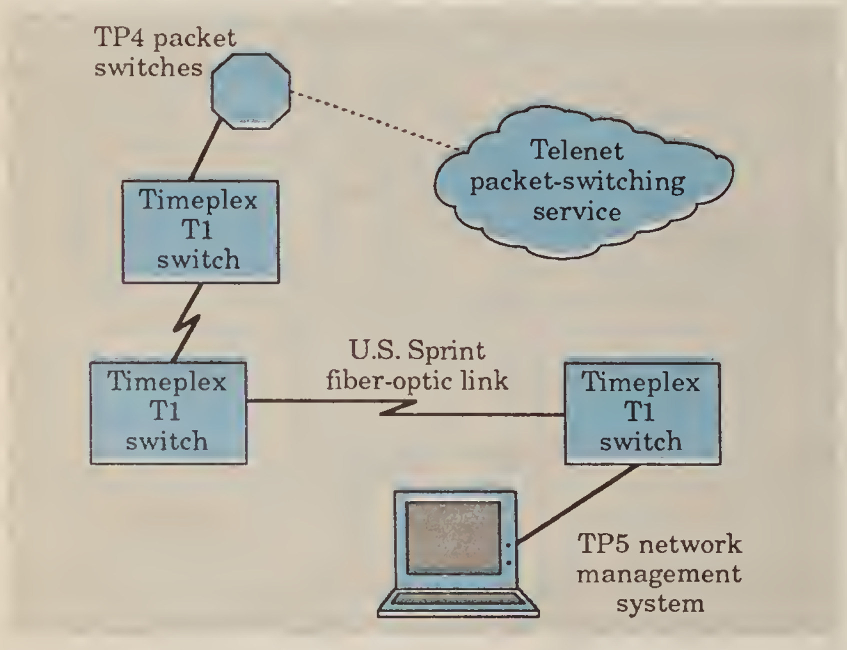
Part of the U.S. Sprint and Telenet solution are Telenet's public data network, or U.S. Sprint Virtual Private Network, which can be used to link user sites that cannot cost-justify dedicated T1 or packet-switched connections, Holmblad said.

"The announcement of Telenet's Integrated Digital Network offering, using the Timeplex Link family, brings integrated voice and data services to a broad range of traditional data communications users," said Victoria Brown, Timeplex senior vice-president of sales and marketing.

Another future source of hybrid packet-switched T1 solutions is Bolt Beranek & Newman, Inc., which announced last week that it has exercised its option to acquire T1 switch vendor Network Switching Systems, Inc.

Telenet puts its packets on T1 links

Integrated Digital Network combines Telenet's packet switched offerings with Timeplex T1 switches and U.S. Sprint T1 lines.


TP4 packet switches
Telenet packet-switching service
Timeplex T1 switch
U.S. Sprint fiber-optic link
Timeplex T1 switch
Timeplex T1 switch
TP5 network management system

INFORMATION PROVIDED BY TELENET COMMUNICATIONS CORP.
CW CHART: SUSAN ALDAM

Products fill gap in OSI, SNA integration

BY ELISABETH HORWITT
CW STAFF

LAS VEGAS — Several harbingers of commercial Open Systems Interconnect (OSI)-based systems that provide connectivity between IBM and non-IBM communications environments were among the products introduced at Interface '87 last week.

While current and announced products from IBM provide support for CCITT X.25 packet switching, IEEE 802.3 Ethernet network and CCITT X.400 electronic-mail specifications (all parts of the OSI protocol suite), the vendor still has a long way to go before it provides high-level integration between OSI and its own Systems Network Architecture (SNA), industry experts claimed. Products announced at Interface, which promise to fill that gap, include the following:

- Sidney Development Corp. introduced Messenger 400/PC LAN, the first commercially available implementation of X.400 protocols on a personal computer local-area network (LAN), the company claimed. The product, which runs over any networking hardware that supports Novell, Inc.'s Advanced Netware LAN system, allows systems based on IBM's PC-DOS to exchange documents with other computer systems running Messenger 400 over remote or local links. An X.25 remote interface is optional. For any PC running PC-DOS 3.1 or higher, the Messenger 400/PC LAN costs approximately $200 per copy in volume.
- The Orion Group, Inc. and Retix jointly announced a gateway between X.400 and IBM's Systems Network Architecture Distributed Services, which they plan to offer by year's end.
- Rabbit Software Corp. said it plans to integrate OSI and SNA-based protocol suites with the SNA controller-emulation and LAN-to-remote host connectivity products of Microplus II and CTI Data. "IBM is resisting OSI as much as it can because it overlaps with and contradicts LU6.2," the firm said.
- Touch Communications, Inc. announced the first of a family of controller-resident OSI-compatible software products that will enable a wide variety of computers to exchange files on either an 802.3 Ethernet or 802.5 Token-Ring. Last week's introduction was OSI software for 3Com Corp.'s Etherlink Plus Ethernet board for the IBM Personal Computer. Scheduled for availability in the third quarter of this year, the software will retail for $300 per copy.

Touch also announced that it would start introducing versions of products based on the new 3.0 version of MAP/TOP OSI protocols sometime this year. The new version will provide record-level access within the OSI protocol FTAM as well as a more finalized version of the X.400 E-mail protocols, he added.

Tool allows IBM PCs to use LU6.2 to access mainframes

BY ELISABETH HORWITT
CW STAFF

LAGUNA HILLS, Calif. — A software package introduced by Network Software Associates, Inc. last week is said to allow IBM Personal Computers to use LU6.2 protocols to access a mainframe via a direct cluster controller-based coaxial connection for the first time.

Adapt3274 LU6.2/Advanced Program-to-Program Communications targets "the huge installed base of companies" with PCs accessing mainframe hosts through 3274 or 3174 cluster controllers, noted NSA Vice-President of Marketing Steve Chiu. The software uses existing IBM or equivalent 3278 and 3279 coaxial emulation boards, "but you do peer-to-peer instead of dumb terminal communications that require large system overhead and slow file transfer," Chiu said.

The product is not an application. Rather, it provides the underlying connectivity on the PC end for applications that are written for IBM's LU6.2/APPC protocols, Chiu said.

Currently, users must write their own applications, both on the PC and mainframe side, or else implement the recently introduced XCOM 6.2 from Spectrum Concepts, Inc.

Adapt3274 LU6.2/APPC runs on an IBM PC, PC XT, AT or compatible with 192K bytes of memory and IBM's PC 3278/9 Emulation Advanced Adapter board. It runs on IBM's PC-DOS 2.0 and above. It consists of the APPC module, which implements LU6.2/APPC verbs, and the Applications Sub-System Interface and System Tutorial for applications developers. Priced at $485 for the complete system, it is available now.

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IBM's sales of its leased hardware take off

Last year, 19,000 hardware units resold after leases expired; 1987 resales expected to triple

BY JEAN S. BOZMAN
CW STAFF

ORLANDO, Fla. — IBM salesmen last year resold 19,000 hardware units when leases written by its IBM Credit Corp. (ICC) subsidiary expired, and resales will nearly triple this year, the president of the subsidiary told officers of an organization for third-party firms last week.

ICC President Harry L. Kavetas, named to that position last fall, made the remarks Thursday in a closed meeting of the Computer Dealers and Lessors Association (CDLA) board of directors during the organization's spring meeting here, according to Richard Forsythe, chairman of the CDLA's IBM Relations Committee.

The disclosure runs counter to previous IBM assertions that the company would rely primarily on CDLA members for resale of machines leased by ICC.

In a 1983 attempt to mend relations with leasing companies that were upset concerning the 1981 creation of the IBM subsidiary, then ICC President David A. Finley declared, "We do not plan to remarket ICC-leased equipment through the IBM sales force."

CDLA members have long been worried that ICC, which was created as a financing arm after IBM shifted emphasis from renting machines to direct sales in the early 1980s, has the potential to severely disrupt the third-party leasing industry by flooding the market with hardware priced to undercut the independent firms' competing products.

> The disclosure runs counter to previous IBM assertions that it would rely primarily on CDLA members for resale of machines leased by ICC.

Forsythe disclosed Kavetas's comments during a subsequent meeting of the CDLA's IBM Relations Committee. Several leasing executives in attendance questioned the propriety of new competition from IBM itself, but Forsythe said the resales could be viewed as a legitimate form of competition with CDLA members.

"ICC's policy is to maximize the value of 50,000 serial numbers on lease," Forsythe said. "As long as they sell them within the constraints of an orderly and efficient market, I don't think we can say that any of the others would do any differently." ICC is a dues-paying member of the CDLA and has agreed to abide by the organization's rules of conduct in the marketplace, he added.

But Forsythe conceded that the increased IBM resale activity could reassert Big Blue's account control in the used-hardware marketplace. "Our concern is that IBM will use these machines as an interim product to another IBM machine in the account," Forsythe said. "The marketing is done by the IBM sales force and not by ICC, and I expect we will see more and more of that in the coming year.

"We are concerned with the notion of IBM marketing used machines," he continued, "but I don't know what we can do about it."

Forsythe said that IBM ships most machines coming off lease to a central warehouse in Raleigh, N.C., for refurbishment. Then IBM hands them over to its sales force for bids against competing units from Amdahl Corp. and other vendors, he added.

Priority list

IBM executives told CDLA directors that there is a priority list for disposal once a machine comes off an ICC lease. First, IBM will try to sell the unit to the existing customer, Forsythe said. A second option is to use the machine within IBM internal operations, and a third option is to sell it to end users or CDLA members, he added.

In other leasing industry news last week, Meridian Leasing Corp., the fourth largest independent computer lessor in the U.S., announced it will acquire UK-based United Leasing PLC and its New York-based subsidiary, Unilease, for an undisclosed amount. The purchase will be handled by Inspectorate International S.A., a Swiss shareholder of Deerfield, Ill.-based Meridian. The deal illustrates the continued consolidation of the industry, which has seen several acquisitions in recent months.

CSA revamp

FROM PAGE 1

availability, at a time when many users were in the process of signing up for the agreement.

"People were reluctant to sign up for it with all the meat hooks in it, such as the termination charges," said John Jones, computer operations manager at Avon Fashions in Hampton, Va. "All the changes are very significant, but the change in the termination charge is the most significant. To be able to sign up for five years and have six months to get out is very attractive," Jones said.

The new termination policy permits a customer to withdraw equipment from the three-year plan without penalty by providing both three months notice and six months notice under the five-year contract. Customers who fail to provide notice may have to pay a one-month CSA maintenance charge. But customers who have signed the one-year agreement need only give prior notice with no interval specified.

Move no joke

Jones said he had been looking into the CSA, estimating that he would save some $1,500 per month under the three-year plan. Since last week's announcement, he said he had been called by IBM personnel "at all levels" some six times asking him to sign up for it.

Although the announcement was made April 1, third-party maintenance providers are not viewing Big Blue's move as a joke.

"Not many [third-party vendors] can take too many blows like this. We are going to respond with a competitive offer and it will be put in place before June 1. We have the resources to respond in kind," said Jim Paster, marketing manager of the IBM business segment of Control Data Corp.'s Engineering Services division.

Manufacturers get the service dollar

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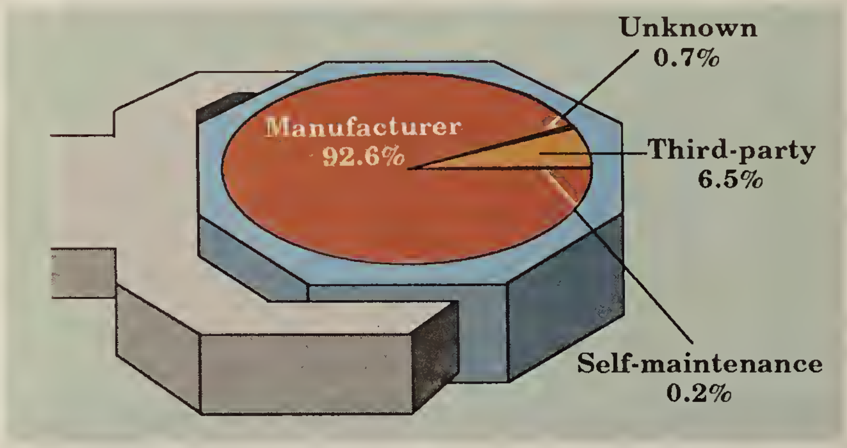

INFORMATION PROVIDED BY INTERNATIONAL DATA CORP
CW CHART: SUSAN ALDAM

"It's an aggressive move on IBM's part, but I don't know why they did it," Paster continued. "IBM's after account control. IBM still enjoys 90% market share in maintenance revenue. So why would they drop charges? It's not worth that much. I'm looking for the logic to this."

He said Control Data's counterstrategy has not been put together yet, but, "We have to convince users that adding people and equipment to comply with CSA must be added against any savings that may result."

In order to qualify for the CSA, a user must have his site inspected by IBM and must answer a questionnaire that covers problem and change tracking. The user must pay $3,500 for a hardware test and $8,600 for a network test.

Savings under the one-year plan vary from 4% to 6%, depending on the equipment covered. The three-year agreement offers an additional 10% savings, and the five-year plan saves the user another 5%.

Don Goodspeed, president of Computer Maintenance Consultants, Ltd. in White Plains, N.Y., was highly critical of the plan in its original form. "The termination charges were outrageous. The price protection was not price protection and the percentage of savings was unrealistic, given the term you had to sign up for," he said.

Goodspeed, who spent 25 years with IBM in its customer service department before founding Computer Maintenance Consultants last year, administered for three years IBM's Enterprise Maintenance Agreement — the predecessor of CSA — in which IBM's largest accounts were given special discounts on service.

He said the enhanced CSA goes a long way to removing the major customer complaints of the original agreement.

CSA is not the only service change made recently by the colossus of Armonk. In January, IBM announced that it would not charge customers for problem resolution when a problem was found to be in non-IBM equipment. Previously, IBM had charged extra for its work in finding such problems.

SPSS adds options to stats aid

BY CHARLES BABCOCK
CW STAFF

CHICAGO — SPSS, Inc. has added decision-support-type forecasting features to its personal computer statistical analysis package, SPSS/PC Plus.

Dubbed SPSS/PC Plus Trends, the IBM Personal Computer XT or PC AT software is said to provide modeling and time-series forecasting capabilities typically found on mainframe statistical analysis packages, said Ellen Carnahan-Walsh, director of marketing for the Chicago-based company.

The option was designed to work with statistics collected during a set period of time, analyze them and project them into the future.

Works with statistics

The software is useful to those working with interest rates, stock prices, company revenue or sales data and other regularly collected information used for predictive purposes, Carnahan-Walsh said.

The Trends package is able to identify patterns in the historical data, chose a statistical model that best fits the pattern and then forecast the future. The user selects what time period the forecast is to cover, she said.

SPSS is also introducing a data entry option, Data Entry II, with translation facilities to move data into SPSS files from such popular personal computer applications as Ashton-Tate's Dbase II and III, Microsoft Corp.'s Multiplan or Lotus Development Corp.'s 1-2-3. In addition, the option will translate mainframe SPSS files into files usable by the PC product, SPSS spokesmen said.

Includes error checking

The option has an error-checking capability that looks for data entry errors created when an entry is made that violates user-set parameters. The error checking does not work if the error happens to fall within the parameters, spokesmen acknowledged. The Trends option will be added to SPSS's mainframe and minicomputer product, SPSS-X, in the fourth quarter of this year, Carnahan-Walsh said.

The two options are each priced at $395, while the SPSS/PC Plus package retails for $795. About 20,000 copies of the package have been licensed, Carnahan-Walsh said. SPSS competes with SAS Institute, Inc. and other statistical analysis software suppliers.

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47 cyl. PDS Unload to Tape				
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SOFTWARE ENGINEERING OF AMERICA SEA

Bells mum on ONA implementation

Sketchy on how enhanced-service providers, local-exchange carriers to share network

BY DONNA RAIMONDI
CW STAFF

LOS ANGELES — The Bell regional holding companies provided few details on how they intend to implement Open Network Architecture (ONA) during a forum with telecommunications users here last week.

Few of the holding companies outlined their preliminary strategies for allowing enhanced-service providers to have the same access as the local-exchange carrier to functions of the basic network as required by the Federal Communications Commission.

The forum was sponsored by Bell Communications Research Corp. to help prepare for the February 1988 deadline for the holding companies' ONA plans, as mandated by the FCC. ONA is supposed to ensure that the operating companies provide consistent basic services with standardized interfaces.

At the first ONA forum held in Orlando, Fla., in January, telecommunications end-user organizations accused the holding companies of withholding information and refusing to work with them to define basic service elements (BSE) and ONA. Responding to those charges, the holding companies agreed to outline the status of their ONA projects at the Los Angeles meeting.

All of the holding companies called for more discussions with information and enhanced-service providers in order to determine what their initial lists of BSEs — the building blocks of the networks — will be. They all plan to hold private forums with their customers during the next few months.

However, the needs of data managers were not addressed during the two days of meetings.

"Right now, there is no direct significance in ONA to the MIS manager or the end user," said Michael Dortch, telecommunications analyst at The Yankee Group. "And the reason that is true is that the holding companies do not understand data." But there will not be any integrated voice and data networks in the future without integrated voice and data network management, so MIS should be getting involved in voice issues such as ONA and letting the holding companies know what their needs are, he added.

"We are only a data provider on a private-line basis, and that is why we didn't address data issues here," said Richard Vehige, assistant vice-president at Southwestern Bell Corp. "To do for data what we are doing here for voice — like unbundling services — we first need to get relieved from the [Department of Justice's Modified Final Judgment] restrictions," he said.

But that reason is not valid, according to Henry Levine, an attorney at the law firm of Morrison and Foerster in Washington, D.C., who represents several large banks' interest in ONA. "ONA offers the hope of customizing ISDN by choosing elements MIS needs to link nodes," he explained, referring to the Integrated Services Digital Network.

Levine added that end users he represents in users groups were disappointed in most of the holding company presentations. "With the exception of Southwestern Bell, which shared actual straw-man projects with us, we did not hear much about their efforts," he said.

Southwestern Bell was able to extract BSE possibilities from projected trials because they actually tried to work out the projects on paper.

"Basically, all the holding companies can talk about now is services that are already in the network," said an ONA overseer from GTE Corp. While an FCC ruling two weeks ago exempted independent communications firms like GTE from having to file ONA plans, GTE will be subject to the holding companies' ONA plans from a competitive point-of-view, he said.

Common language sought

Several difficulties bar the way to development of the BSEs, attendees said. "There ought to be a common language so when the holding companies talk, we can understand them," one attendee said during a discussion session. Standardizing language, BSEs and interfaces is crucial, Levine said. The holding companies' answers to questions on standardization elicited "trust me" answers, but the issue kept coming up.

Another problem is that the holding companies are in direct competition with the enhanced-service and information providers for whom they will be developing BSEs. Several of the 300 attendees asked the holding companies how users could trust that the strategic plans the firms revealed in order to help establish BSEs would not be used by the holding companies themselves. "Those fears are legitimate," one holding company representative said. "We do the same thing with AT&T — they are a provider to us and also our competition — so we have some experience there."

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U.S. SEMINARS

AK	Anchorage	Apr 14
AL	Birmingham	May 12
AR	Little Rock	May 12
AZ	Phoenix	Apr 15, Jun 3
	Tucson	Jun 30
CA	Concord	Jun 10
	Los Angeles	Apr 7, May 12, Jun 16
	Newport Beach	May 5
	Pleasanton	Apr 8
	Sacramento	May 5
	San Diego	May 14
	San Francisco	Apr 9, May 7, Jun 16
	San Jose	Apr 30, Jun 18
CO	Colorado Springs	Apr 21
	Denver	Apr 16, May 5, Jun 25
CT	Hartford (Farm.)	May 5
DE	Wilmington	May 5
FL	Tampa	Apr 8
GA	Atlanta	May 6
IA	Des Moines	Apr 15, Jun 17
ID	Boise	Jun 4
IL	Chicago	Apr 9, May 14, Jun 11
	Springfield	May 7
IN	Indianapolis	Apr 22, May 20, Jun 25
KS	Wichita	Apr 2
KY	Louisville	Apr 8
LA	New Orleans	Apr 15, Jun 26
MA	Boston	Apr 15, May 14, Jun 10
	Springfield	Apr 9
MD	Baltimore	Apr 2, Jun 24
	Bethesda	Apr 7, Apr 15, Apr 21, May 5, May 13, May 19, Jun 4, Jun 10, Jun 18
ME	Portland	Apr 22
MI	Detroit	Apr 7, May 12, Jun 9
	Grand Rapids	Apr 9
MN	Minneapolis	Apr 23, May 13, Jun 30
MO	Kansas City	Apr 9, Jun 9
	St. Louis	Apr 14, May 12, Jun 16
NE	Omaha	Jun 2
NJ	Iselin	Apr 1, Apr 15, Apr 29, May 13, May 19, Jun 11, Jun 25
NM	Albuquerque	Apr 30
NV	Las Vegas	Apr 1
NY	Albany	Apr 23, Jun 17
	Buffalo	Apr 8
	New York City	Apr 8, Apr 16, Apr 22, May 6, May 14, May 21, Jun 16, Jun 24
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Olsen slams GM's MAP, touts Decnet

BY CLINTON WILDER
CW STAFF

ORLANDO, Fla. — Adding fuel to the controversy surrounding computer-integrated manufacturing standards, Digital Equipment Corp. President Kenneth Olsen last week criticized both the technical features and the slow development progress of General Motors Corp.'s Manufacturing Automation Protocol (MAP).

In the keynote speech at the ADAPSO Management Conference, Olsen disparaged MAP and touted the technology and availability of Ethernet and DEC's proprietary Ethernet-based network, Decnet.

Although Olsen said DEC will continue to support the multivendor MAP effort, he said he was skeptical about MAP technology. Without referring to GM by name, Olsen said, "We'll say that we support you, we're your friends and you're a big customer, but don't interpret that to mean that I think it [MAP] will work."

DEC, a major vendor of hardware and software for factory-floor applications, has worked with GM on MAP since the standard's early development. DEC participated in a demonstration of MAP Version 1.0 at the 1984 National Computer Conference, and DEC officials have admitted that some factory automation needs are better served by MAP than by Decnet [CW, Sept. 1, 1986].

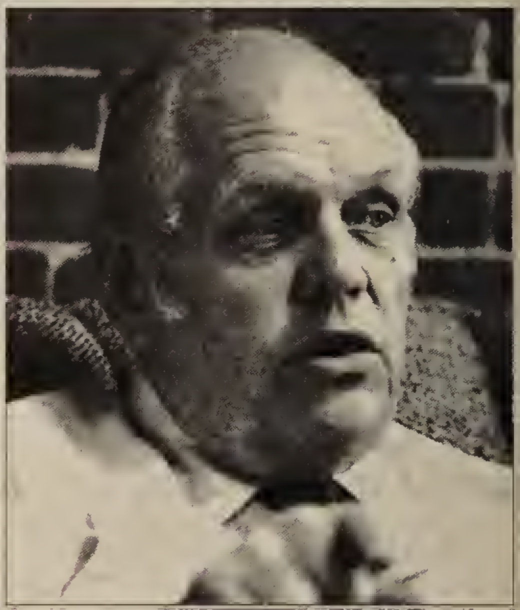
But in recent weeks, Olsen has begun to offer public criticism of MAP, and he chose the software and services industry's biannual get-together as a forum. His keynote speech was in sharp contrast to IBM Chairman John Akers' uneventful address on international trade concerns at the previous ADAPSO conference in Phoenix last fall.

Olsen's essential criticism was that MAP, as a nonproprietary networking standard, cannot offer enhanced features. "We applaud the need in the factory for standards, but the software has to work with hundreds or even thousands of components," he said. "To expect to achieve that without proprietary features is unrealistic. With MAP, it's been eight years already."

Olsen compared a standardized networking scheme with a standardized automobile.

"If you built a car where every fender was the same as every other car, there would be two things wrong with it," he said. "Nobody would want it, and no one would invest in tooling for it or testing it without a proprietary interest."

Olsen's comments drew a strong response from Charles Gardner, corporate coordinator of communications standards for Eastman Kodak Co. and chairman of the MAP/TOP Steering Committee.



DEC President Olsen

"Ken Olsen seems to imply that Ethernet and Decnet have all the answers to all the problems we're trying to solve right now, and users reject that," Gardner told *Computerworld.* "Decnet doesn't do a damn thing to interface with all the controllers I have on my floor. It's certainly not a multivendor solution, which is what you want."

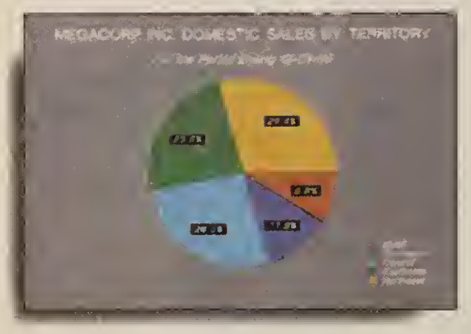
Gardner said that MAP developers and advocates have been confused by Olsen's recent comments. "We're trying to understand what he's saying; DEC says he doesn't mean that he doesn't support MAP," Gardner said. "The thing that's puzzling is that DEC is doing a good job incorporating Open Standards Interconnect standards in their products."

Gardner noted that Ethernet is not suited to factory applications requiring precise timing of data exchange.

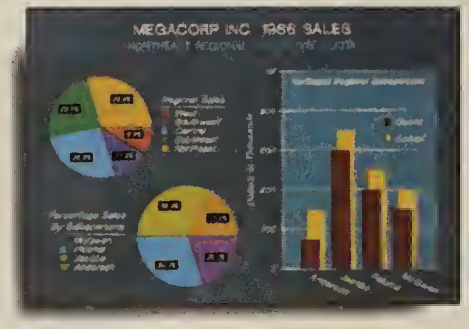
"The broadband token bus is needed in the factory, and Olsen doesn't seem to understand that," he said. "For some control applications, you need to calculate how long it takes a message to get from one place to another, and Ethernet can only give a probability."

Whether Olsen's current campaign will affect MAP progress is unclear. Marcia Brooks, a senior analyst for International Data Corp.'s technical computer service, said Decnet will not supplant MAP in the long term.

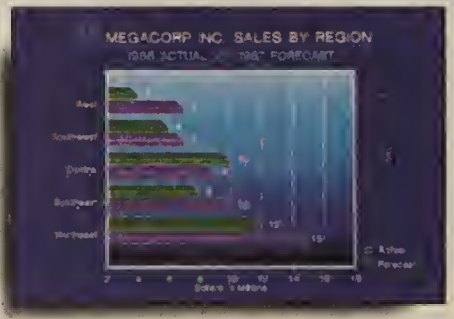
"Even a company of the magnitude of DEC can't supply all the unique interfaces for the factory floor," she said. "Olsen's criticisms are understandable, because people are frustrated and thought MAP would be here by now. He clearly has a product that works and is available, but over the long term, I believe MAP will prevail."



Executive Assistant. Standalone PC; preformatted graph using Lotus® 1-2-3® data.

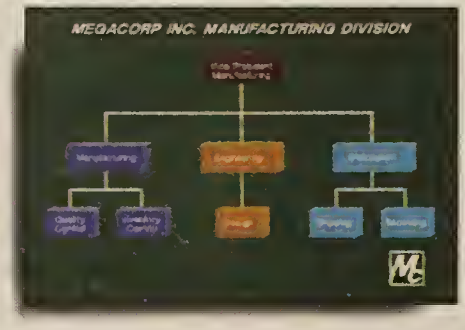


Regional Sales Manager. Departmental mini using data from PC.

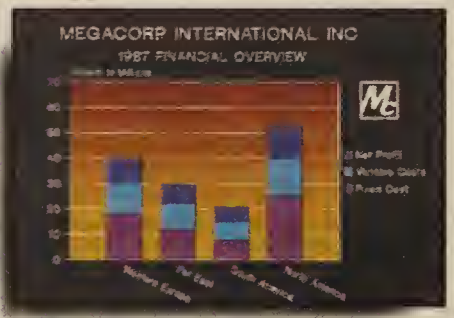


National Sales Manager. IBM PC off mainframe; data uploaded from mini.

Corporate Graphics Artist. Created using Editor at graphics workstation.



Vice President of Manufacturing. Departmental mini.



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3317-8714

Development team sues Uccel over ditched ADC2

BY JAMES A. MARTIN
CW STAFF

SAN JOSE, Calif. — Uccel Corp. is the target of a $10 million breach of contract and fraud suit filed recently by the two men who developed the mainframe scheduling software package that Uccel acquired last year and has vowed to drop by 1988.

The lawsuit charges that Uccel acquired The Cambridge Systems Group, Inc. with the intention of removing that firm's Automated Data Center Job Scheduling and Production Control (ADC2) from the market so that Uccel could better promote its competing package, UCC-7.

The lawsuit was filed March 27 in Santa Clara County, Calif., Superior Court by Richard L. Heuser and Raymond C. Mayo, developers of ADC2. Heuser and Mayo, as Productivity Software, Inc., sold ADC2 to Cambridge Systems in June 1982. Uccel, in turn, acquired Cambridge Systems in December 1986.

Two months after the acquisition, Uccel notified the ADC2 installed base of approximately 130 users that the company would stop marketing ADC2 in February and cease supporting the most recent release by late 1988 [CW, March 9].

By discontinuing ADC2, Uccel has violated the original purchase agreement with Productivity Software and will be depriving the ADC2 authors of royalties that were agreed on in that contract, the suit claims.

'Six-digit' royalties

The amount of the royalties Heuser and Mayo receive for ADC2 was not disclosed, although Mayo said the figure is "in the six digits."

The 13-count lawsuit names as defendants Uccel, Cambridge Systems and Shawn McClaren, former Cambridge Systems president, who is now with Uccel. Besides charging breach of contract and fraud, the suit seeks an injunction that would force Uccel to transfer all ADC2 rights to Heuser and Mayo and to refrain from any further contact with ADC2 users.

Uccel representatives would not comment on the suit last week. The company has previously asserted that it did not seek to remove ADC2 from the market when it acquired Cambridge Systems but rather that Uccel's support of two mainframe scheduling packages would be financially improbable. Uccel also discontinued support for its UCC-3 mainframe disk-management system in favor of Cambridge Systems' Automated Storage Management package.

Separately, an ADC2 users group is planning to meet later this week in Indianapolis with the intention of discussing alternatives to the free UCC-7 conversion program Uccel currently offers ADC2 users.

Many ADC2 users were upset at Uccel's announcement and have not decided whether they want to take advantage of Uccel's conversion offer. In addition, several software firms with competitive IBM MVS or MVS/XA schedulers have been contacting ADC2 users with special offers to convert to their packages [CW, March 23].

While the users group has not expressed interest in legal action of its own, members say they hope the source code for ADC2 will be turned over to a third party, such as Heuser and Mayo.

Real-time Ada bows

Concurrent aims version at embedded systems

BY ALAN ALPER
CW STAFF

TINTON FALLS, N.J. — Concurrent Computer Corp. has unveiled a version of the Ada language that it says is optimized for use in developing real-time applications for its MPS family of multiprocessor systems.

C3Ada operates under Concurrent's proprietary operating system OS/32 and has been validated as an implementation of the Ada language as defined by standards established by the American National Standards Institute, according to the company.

C3Ada has a natural language interface to a set of operating system, assembler and macro routines with tools that permit integration into an Ada library, Concurrent noted.

Applications developed under C3Ada run at 4,000 Dhrystones/sec. on a Concurrent 3280MPS uniprocessor system or at 25,000 Dhrystones/sec. on a six-processor system, Concurrent said.

The Ada implementation also comes with a compiler for applications written in Fortran, according to Dennis Tinley, Concurrent's manager of software products. "Embedded systems are a target for our version of Ada," he said.

The Fortran interface provides users with access to Concurrent's Fortran VII Run Time Library and to modules compiled by its Fortran VII compiler, Tinley added.

C3Ada will reportedly be available in late June and is priced from $17,500 to $33,00 per copy, the firm said.

Slow acceptance

Although Ada has been in development for the past decade as a Department of Defense standard, contractors have been slow to adopt the language.

Most applications are still developed in Fortran, although momentum is swinging toward Ada, Tinley said.

"DOD has mandated Ada for all mission-critical applications," he commented. "There are 70 compilers now, that's up from 12 in 1984."

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Cincom plans to support IBM DBMS

Supra to provide IMS, DB2 support, bringing 'order to chaos' in large IBM shops

BY JEAN S. BOZMAN
CW STAFF

CINCINNATI — Cincom Systems, Inc. is planning to add IBM IMS and DB2 support to its Supra relational data base management system (DBMS), company executives said last week.

The additions to Supra would enable Cincom users to plan staged transitions of their IMS data base applications to DB2, once support for those systems is incorporated into Supra, Cincom said.

The new modules are aimed at large IBM shops that are undergoing conversions from IMS, a nonrelational data base, to relational data bases such as DB2 or Supra.

"We are trying to bring order to the chaos that exists in many large IBM shops," said Thomas R. McLean, Cincom vice-president of marketing and product planning.

"There is a heterogeneous data base environment dominated by IMS and VSAM, and we are trying to help solve the problem of bringing that data into a relational data base," McLean said.

IMS tool to arrive first

Cincom did not give a specific time frame for IMS and DB2 support, but the company said that the IMS product would probably come first.

"IMS is the next one we're doing," said Ron Hank, senior manager for corporate relations, "and that's because it's the biggest replacement market right now."

Cincom has suggested that users start writing Mantis applications for IMS now and then run them under Supra when the Supra IMS module is available.

A separate DB2 module will include support for IBM's Structured Query Language, company managers said.

Mantis facilitates source code

Mantis is said to allow programmers to create source code that can run in various processing environments.

Cincom's code surrounds this source code with a series of software modules addressing the teleprocessing monitor (CICS or TSO) and operating system of choice.

Among the IBM operating systems supported are VM, MVS and DOS/VSE. Mantis also runs under Digital Equipment Corp.'s VMS and Wang Laboratories, Inc.'s VS.

Text-retrieval package

Cincom also revealed that it plans to sell a text-retrieval package that had previously been tested and sold in the company's overseas markets.

Called Mantext, Cincom said the text-processing package will allow users to create reports and memoranda based on data extracted from a DBMS. Cincom said it intends to offer the product, along with Mantis, under a new vertical marketing strategy targeting the insurance, hospital, financial and manufacturing industries.

Cincom, which projects revenue of $120 million by the end of its fiscal year in September, has spent about $100 million in research and development during the last seven years, Hank said.

Much of that R&D and money has gone into creating the company's mainline products, the Supra relational DBMS, Mantis, the Netmaster network management system and the Spectra user-query language.

Stream of enhancements

Cincom President Dennis Yablonsky said the next year or two will see a continuing stream of enhancements to Cincom's basic product line.

Besides the IMS and DB2 support features, these enhancements would include full support for both IBM PC-DOS machines and DEC VAX workstations.

"We intend to bite off the challenge of supporting Microsoft Corp.'s MS-DOS," Yablonsky said, but he would not rule out future support for Unix, as well.

"We're in the unique position to provide users throughout a corporation with the same external view of the corporate network, and that view would be the same whether the user is sitting at an IBM PC or at a DEC VT100. We're not there yet, but we're further along than anyone else," he added.

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NBS votes to improve ballot security

BY MITCH BETTS
CW STAFF

GAITHERSBURG, Md. — Because of continuing public skepticism about computerized vote-counting systems used for elections, the National Bureau of Standards (NBS) has launched a project to improve the security controls for election administration.

In addition, the National Clearinghouse on Election Administration, part of the Federal Election Commission, is developing hardware and software performance standards for use by state and local election officials [CW, July 29, 1985].

Many voters, particularly supporters of losing candidates, view the tabulation systems as mysterious black boxes that can be manipulated for purposes of vote fraud, according to Roy G. Saltman, a computer scientist at NBS' Institute for Computer Sciences and Technology.

"The overall question is how do we improve public confidence about the outcome?," he says.

While acknowledging the potential for fraud, Saltman says the more common problem with the systems is vote-counting error. He cites a 13,000-vote error that occurred in Carroll County, Md., in 1984 because of a software mix-up.

Moreover, election administrators rarely have the proper audit trails or software documentation to investigate errors or defend accurate vote counts, he says.

The new project, Saltman says, will review current systems and procedures, study five "problem elections" from 1980 to 1986 and make recommendations for improvements in computer security, auditing and general operations.

For example, Saltman says there have been many cases of incorrect initialization of the vote-tallying programs — a process that is necessary to assign the votes to the right candidate on a complicated ballot. "These errors happen. Some claim they're deliberate; others say it's simply maladministration, inattention and incompetence," he says.

Since 1980, there have been at least five instances where losing candidates have charged that the punched-card systems were faulty or subject to vote fraud.

Saltman, who wrote a seminal study on computerized vote tallying in 1975, says the NBS project will build on earlier research to generate fresh recommendations for publication at the end of this year. Saltman says he expects to spend the next two years trying to get state and local election administrators to implement the recommendations.

Competing compilers are basically same

BY PEGGY WATT
CW STAFF

Both Borland International and Microsoft Corp. released Basic compilers in the past two weeks, each trying to provide faster, more fully featured language development tools in their comparable products.

Because the machines' prices are similar — $99.95 for Borland's Turbo Basic and $99 for Quick Basic Version 3.0 from Microsoft — much of the programmer's choice comes down to personal preferences among features.

Both programs are said to compile at 12,000 line/min. and have built-in editors. Both use windows for debugging and displaying compilation, support math coprocessors or emulate them, create libraries for general-purpose routines and meet IEEE floating-point standards.

Microsoft speeded up development of its latest upgrade to match or beat Turbo Basic's features before the competition's release, said Rob Dickerson, languages group product manager at Microsoft. He said the upgrade shipped in late March and is available to registered users for $15.

Borland's newest Turbo language product, which has an interface similar to Turbo Pascal, ships this month.

Dickerson pointed to advanced debugging techniques as Quick Basic's strong suit. Many of the advanced features were incorporated from Microsoft's high-end language products, including technology from Codeview, the window-oriented symbolic debugger.

"Our debugger is a whole debugging source code," Dickerson said. "You can trace at the source level. Instead of just displaying the line number, it shows your program in a window and highlights each line as it is executed."

Microsoft's linker also allows the programmer to separately compile and link source code modules, Dickerson added.

However, Turbo Basic has true recursion, which allows the user to define a function to call itself, and offers self-specified communications, sound and music buffers. Borland representatives were not available to elaborate on the company's new product.

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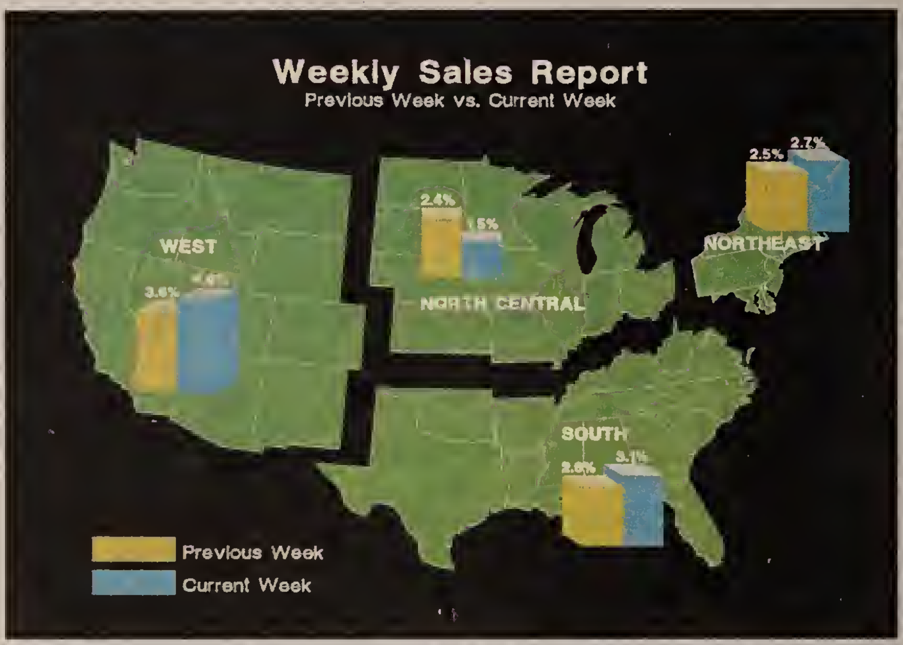

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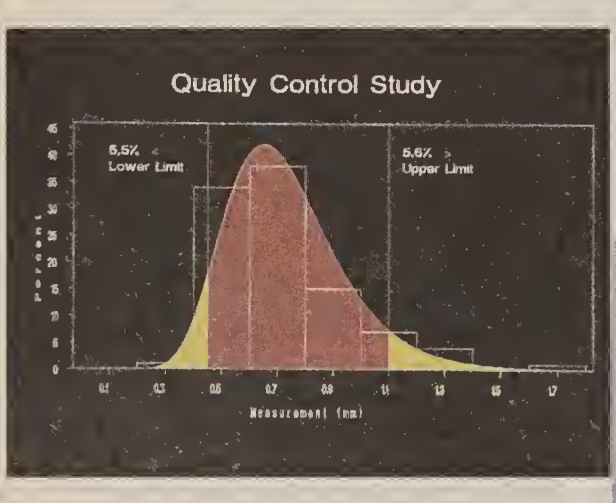
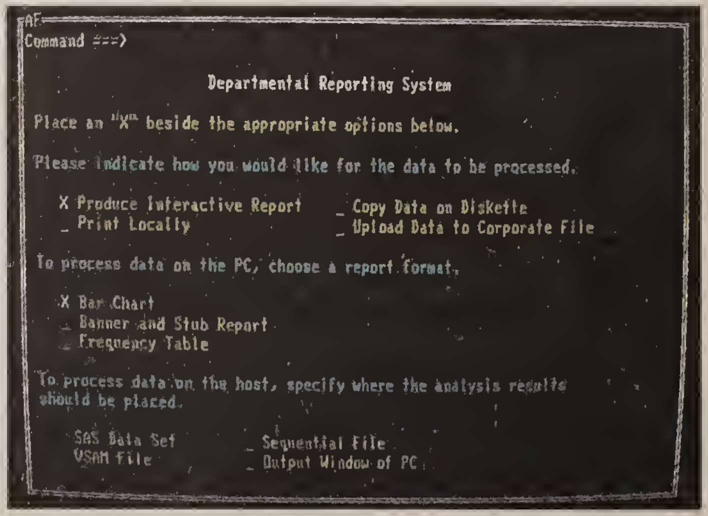




```
AF
Command ===>

                  Departmental Reporting System

 Place an "X" beside the appropriate options below.

 Please indicate how you would like for the data to be processed.

   X Produce Interactive Report     _ Copy Data on Diskette
   _ Print Locally                  _ Upload Data to Corporate File

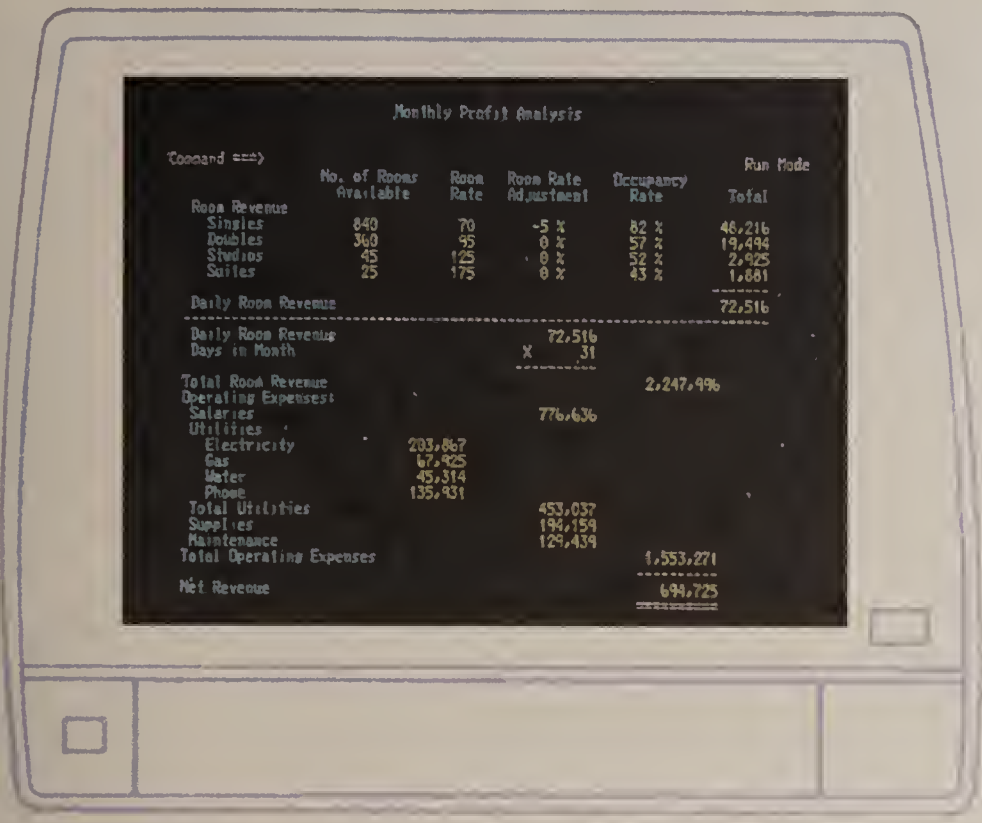
 To process data on the PC, choose a report format.

   X Bar Chart
   _ Banner and Stub Report
   _ Frequency Table

 To process data on the host, specify where the analysis results
 should be placed.

     SAS Data Set            _ Sequential File
     VSAM File               _ Output Window of PC
```

SYSTEM



```
                         Monthly Profit Analysis

Command ===>                                                       Run Mode
                   No. of Rooms   Room   Room Rate   Occupancy
                    Available     Rate   Adjustment    Rate          Total
  Room Revenue
    Singles            840         70       -5 %        82 %        48,216
    Doubles            360         95        0 %        57 %        19,494
    Studios             45        125        0 %        52 %         2,925
    Suites              25        175        0 %        43 %         1,881
                                                                  --------
  Daily Room Revenue                                                72,516
-------------------------------------------------------------------------
  Daily Room Revenue                        72,516
  Days in Month                         X       31
                                       ----------
 Total Room Revenue                                      2,247,996
 Operating Expenses:
  Salaries                                 776,636
  Utilities
    Electricity                203,867
    Gas                         67,925
    Water                       45,314
    Phone                      135,931
  Total Utilities                          453,037
  Supplies                                 194,159
  Maintenance                              129,439
 Total Operating Expenses                                1,553,271
                                                        ----------
 Net Revenue                                               694,725
                                                        ==========
```

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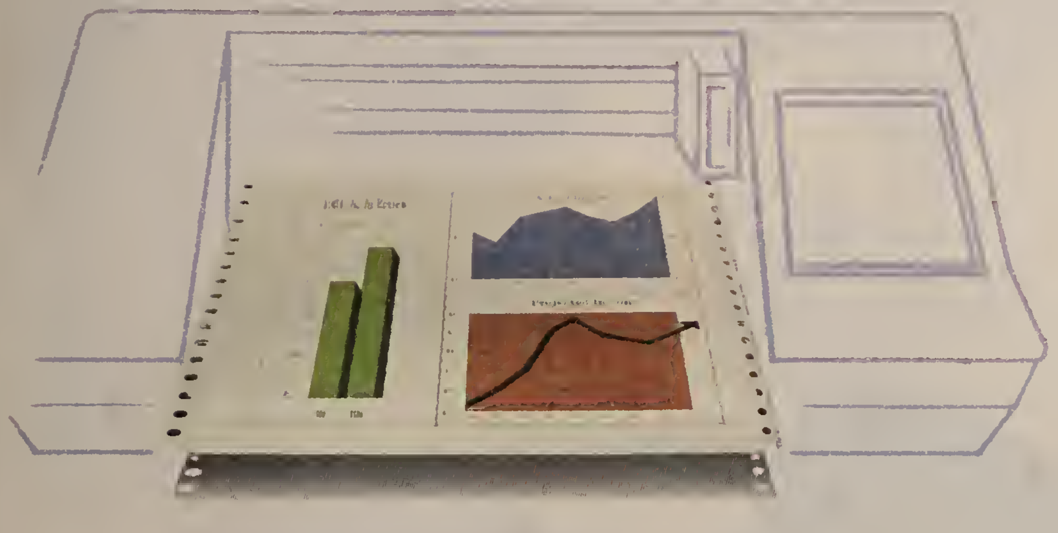

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Los Angeles	April 22	Kansas City	April 30	Denver	May 7	Hartford	May 14
Seattle	April 23	Boston	April 30	Cincinnati	May 7	Newport Beach	May 19
Vancouver	April 23	Houston	May 5	New Jersey	May 12	Ft. Lauderdale	May 19
Chicago	April 28	Detroit	May 5	St. Louis	May 12	Atlanta	May 20
Philadelphia	April 28	Dallas	May 6	Washington D.C.	May 13	Raleigh	May 21
Minneapolis	April 29						

Aldus support plan woos big business

BY PEGGY WATT
CW STAFF

SEATTLE — Aldus Corp. has launched a corporate training and support program in an effort to widen the firm's appeal to large businesses. The announcement comes on the heels of the company's release of an IBM Personal Computer version of Pagemaker, Aldus's page-design program.

Aldus's services will be available to companies using either the PC or the Apple Computer, Inc. Macintosh version of Pagemaker, which helped popularize microcomputer publishing.

Several support options are available. Level I costs $1,000 per year and allows unlimited toll-free calls by designated individuals within the corporation to Aldus's technical staff. Users get free program upgrades and new releases at half price, technical support notes, updates to the Pagemaker user's manual and subscriptions to Aldus user publications. The Level II plan, costing $2,000 per year, includes Level I features and adds on-site training of the corporation's support staff by an Aldus representative.

A Train-The-Trainer class on Pagemaker is available separately, for up to 10 corporate trainers, for $1,500. Course materials also are available separately.

"The training goes beyond Pagemaker training. It's actually also a class in page layout and graphic design," said Kathleen Humphrey, corporate development marketing manager.

No minimum purchase is required to join the support program, but Aldus suggests that at least 10 users take the training course. The class is offered as a supplement to programs from dealers, who receive similar training, Humphrey said.

Aldus's direct volume-purchase program is limited to a network-license agreement, available through dealers, under which users buy copies of Pagemaker — in multiples of four at a 35% discount — for use on a single-site network, according to an Aldus representative.

Corporate users increasingly ask for true multiuser support, which is now an Aldus development priority, said Paul Brainerd, Aldus president. The January release of Pagemaker for IBM PC systems, which has boosted corporate use of the design package, prompted Aldus to give more attention to large corporate needs and to develop the support program, he added. "The corporate customers have different requirements for support and training, which are near the top priorities in evaluating a product."

Bell freedom spells change

BY PEGGY WATT
CW STAFF

SAN FRANCISCO — More freedom for the regional Bell holding companies may not only invite new competition but also open the door for lucrative partnerships and new customer services, according to industry analysts and observers.

During a recent Communications and Computers conference held here, several industry analysts said they expect the holding companies to shed some government-mandated restrictions in the current triannual review of the 1983 Modified Final Judgment that broke up the Bell system. A decision is expected by fall, and the Department of Justice has recommended that the holding companies be allowed to enter such currently prohibited fields as information services, equipment manufacturing and limited long-distance service.

If the holding companies receive sweeping approval to enter new fields, both they and customers will be better off if the firms concentrate on their strengths and forge alliances with other companies that have complementary services, said Andrew Lipman of the Washington, D.C., law firm of Pepper, Hamilton & Scheetz.

More information services could be available on-line through joint efforts of data base developers and the divested Bell operating companies that arrange transmission, said John Dexheimer, a principal in Broadview Associates, Fort Lee, N.J.-based financial consultants.

Robert J. Casale, managing director of Kidder, Peabody & Co. and a former AT&T marketing executive, said more deregulation is just a matter of time, adding that the holding companies will be ready. "They've invested more than $5 million in acquisitions since divestiture," buying parts of businesses that can do what they cannot, he said. "They want to represent their business as a transaction business, not a utility business."

And as the holding companies' bonds are loosened, AT&T will have new, eager rivals as experienced in telecommunications as it is, Casale said. "I don't think AT&T is uncomfortable about competition from MCI Communications Corp. and U.S. Sprint Communications Co. The regional Bell holding companies would be a different story."

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EDITORIAL

Strategy all wet

The Reagan administration's decision to impose punitive import duties on certain Japanese electronics products is a risky strategy with little hope of bolstering the U.S. semiconductor industry. Ironically, it is that industry that so ardently sought this first round in what could evolve into a worldwide volley of trade restrictions.

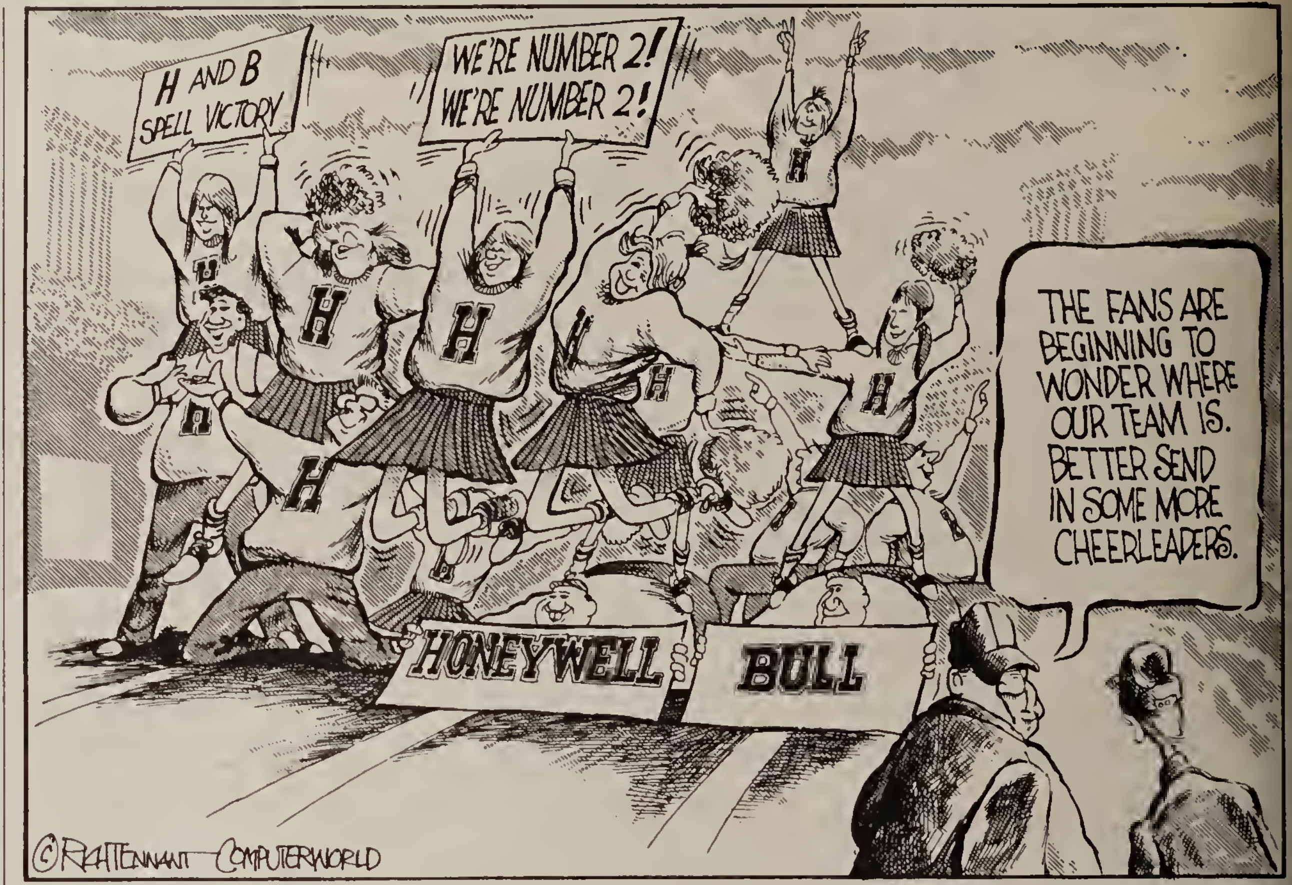
An irony of this latest round of protectionism is that the U.S. government could not impose penalties on the semiconductors at the heart of the dispute, but rather was forced to target other products. If penalties had been imposed on the dynamic random-access memory chips that U.S. firms charge were dumped here and in other markets, domestic computer manufacturers would be faced with more expensive CPU component costs, placing them at a disadvantage to the Asian vendors making rapid inroads.

In fact, it is the U.S. manufacturing industries that benefit most from the Japanese proficiency at capturing markets for commodity electronics products. If there is conclusive evidence of dumping by Japanese firms, then certainly the U.S. government should attempt to force a resolution. But to instigate what could be an escalating battle of recriminations and retaliations on behalf of an industry that will not benefit from the action is foolhardy.

During the heydays of the early 1980s, U.S. chip manufacturers overinvested in plant capacity for products that they knew could only decline in value. The chip makers gambled that each would be the one to capture a commodity market. These new restrictions are intended to provide some breathing room for the U.S. companies to rebuild market share. But that strategy is ridiculous at face value. Those with the most to lose are not the Japanese companies. They are busy chasing new markets, such as 16M-bit memory chips and superconductor technologies. Those that seem certain to lose the most are the same U.S. firms that sought the sanctions. Without the Japanese breathing down their necks, they will take to bloodying each other for incremental increases in market share for last-generation chips that can only decrease in value.

Absent from the chorus of trade recriminators is probably the world's largest producer of semiconductors — IBM. While the U.S. merchant semiconductor industry pines for the past, the world's biggest computer company is busily reaping the rewards of its investments in new technology. As 64K-bit and 256K-bit chips become increasingly valueless, IBM is cranking out 1M-bit chips for new generations of computers.

We think the U.S. government should take its guidance from the largest user of electronic components. Rather than protecting those fixated on a declining market, it should encourage — through the use of investment tax credits — those with new blood that are willing to gamble on developing tomorrow's technology. After all, it is the American way to break new ground and explore new frontiers — not dwell on the former grandeur of a declining empire.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LETTERS TO THE EDITOR

Defend SQL

The author of "Wanted: User SQL Input" [CW, Feb. 16] is absolutely right when he warns against the dangers of the vendor-based, "least denominator" SQL standard. I am frequently faced with the need to explain, advocate and propose DBMSs as systems solutions.

The biggest frustration is the distinction I have to make between the significant advantages that I know are embedded in relational concepts and the rather poor implementations by vendors. One must wonder what kind of strategic thinking pushes vendors to graphics or distributed data bases before such basic and critical relational components as full catalogs, integrity constraints and domains are supported.

Standards are beneficial, but unless they provide the full benefits of relational technology, they will not help anybody in the long run.

Vendors may be shooting themselves in the foot: Users who implement the products because of the standard will fail to obtain the full benefits inherent in the technology (promised by both theoreticians and vendors) and will wonder (with the skepticism induced in them by past experiences) whether they are facing another buzzword again.

Given the lack of knowledge in the field, some have already confused the approach itself with its implementations (as Chris Date of Relational Institute has amply shown), hurting the chances of all. This is a sure way to fall into the waiting hands of those with vested interests in obsolete technologies.

I, therefore, call on the vendors to avoid the mistakes of the past. Since, however, there is good evidence that they fail to listen to reason, I second the author's call to those users who understand what is at stake, to actively defend what may be their best chance for productivity enhancement.

Fabian Pascal
Management Information Specialist
Government of the District of Columbia

This week in history

April 4, 1977
Many companies treat their computers better than their software staffs, charges Anthony I. Wasserman of the University of California. Companies provide comfortable, environmentally controlled centers for their computer, offer health care in the form of preventive maintenance and frequently upgrade systems to prevent them from becoming obsolete, he says.

April 5, 1982
A labor relations expert says that computers can be used as effective tools against strikers and may come into increasing play as strikebreakers. "What ultimately doomed last summer's air traffic controllers strike was the government's use of a new weapon — computer technology — to keep air traffic moving, thus gutting the strikers' leverage," says research associate Harold Shaiken.

Doing the job right

There have been several articles in *Computerworld* about project management. One author stated that most DP organizations do not have formal procedures and urged their use. I think there are some good reasons why this would be true, and the primary reason is a basic need that has not been addressed.

Project management is certainly a difficult job, but it can be done well, as the authors illustrate. It can also be a source of abuse, however, and any experienced programmer can attest to that.

During a project, one of the most critical needs is to clarify where you are and communicate that effectively and nonjudgmentally. Project management does not end with the original project plan and estimates. It is a continual process, and the project manager should always be asking "Where are we and what is required to complete each task?"

Obviously, this requires not only good communication but a clear way to determine where you're at. That effort, in order to be the most accurate, should eliminate as many potentially judgmental factors as possible.

No dates, no estimates, just find out where you are, what needs to be done and who is going to be involved. That is where a programmer can be most helpful. You find out about the dependencies and tasks outside the programmer's control. You find out where you're stuck and why. Then you can work toward better completion dates, keep the project moving and provide management with accurate information.

William R. Brittain
Louisville, Ky.

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   - 31 Dir., Mgr., Suprv., of Programming
   - 32 Programmer, Methods Analyst
   - 35 Dir., Mgr., Suprv., OA/WP
   - 38 Data Comm. Network/Systems Mgt

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   - 12 Vice President/Asst. VP
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Wing tips and white shirts only

In reorganizing Rolm, IBM seeks to remake the company in its own image

AMY WOHL

Rolm Corp. was always pretty formal by California standards. Managers wore suits. Customers were entertained in conference rooms with coffee, not in hot tubs with white wine. But everything is relative. What is formal and conservative by California standards seems pretty loose when measured with a Big Blue yardstick.

It seemed lucky for the Rolm culture, therefore, that IBM's acquisition of the high-flying telecommunications firm in 1984 came with assurances that Rolm would remain Rolm and IBM IBM. Rolm's products might benefit from the jointly applied brains and resources, the thinking went, but the organizations and their employees should keep their individual styles.

That was then, before IBM began to feel strong pressure on its market share and profitability and before serious questions were asked about the popularity of its products, the loyalty of its customers and the astuteness of its long-term strategies.

Strategic integration

But now is now, and IBM is concerned with Rolm's inability to hold, much less increase, its market share in an increasingly competitive market. IBM needs to integrate its telecommunications marketing strategy to appear stronger in a sector that is increasingly important to its information systems strategy. Also, IBM must feel that it's time to get on with moving Rolm's marketing force closer to the IBM style, and that it might save serious money by managing the two sales forces jointly.

IBM claims this merger results directly from a recent meeting with its biggest customers. These customers, IBM says, found dealing with two separate organizations about product lines that often required joint purchasing decisions and significant interconnection confusing and frustrating. (But, we wonder, does this new approach, with the Rolm sales force separately managed but reporting to IBM field management, really address customer complaints?)

Reorganizations in the IBM sales force, largely driven by customer frustration, sound familiar. I remember just a few years ago when three separate IBM divisions — OPD, GSD and DPD — sold computers and office equipment. A customer could seek and receive three recommendations for three distinct solutions to a problem.

Divisional orientation

Ultimately, IBM reorganized its three product-oriented marketing divisions into two customer-oriented divisions essentially aimed at very large and not-so-large customers. One IBM wit told me, "Before the reorganization, we knew what we were selling, but the customers were confused. After the reorganization, customers had one point of contact with IBM, but we had no idea what we were selling."

Customers and consultants witnessed a great deal of that confusion in the early '80s, typically in the form of IBM staffers recommending the wrong products and failing to recognize that there was a much better customer solution available in their current bag of tricks.

The current situation seems to be somewhat different, at least so far. IBM says former Rolm salesmen will continue to sell Rolm products, but under a reorganized, more integrated IBM field management that will also include marketers of other IBM telecommunications and computer products.

That means, I'd guess, an IBM manager trying to gently impose IBM's marketing style on a Rolm sales rep.

IBM Manager: I see you recommended a Rolm switch to Mr. Huge Customer, Bill.

Rolm Rep.: That's right, Tom. He'll be able to service both his telephone needs and his PC connectivity requirements very economically.

IBM Manager: I'm not sure you understand the customer's real needs, Bill. After all, how will he hold up his head at the next IBM Huge Users' Meeting if he's the only guy who hasn't committed yet to a Token Passing Ring? We wouldn't want old Joe to feel left out. And besides, we have this local-area network quota here we have to meet.

Rolm Rep.: But Tom, the customer hasn't really decided on a LAN strategy yet. He's really just starting to investigate that issue. And without the Personal Computer portion of the proposal, I'm not sure we can compete with the AT&T bid on pricing.

IBM Manager: Well, Bill, you have to look at these things from the right point of view. You sell the customer on the fact that we have his interests at heart, that we're the only company big enough to service all his needs and that if he picks a non-IBM solution, he'll make his integration path much harder.

Rolm Rep.: Tom, that means selling futures. This customer wants to buy something right now. Besides, he went through a lot of hoops recently to upgrade from 8100s to System/36s, and John is in there now telling him that 9370 is a great strategy. I don't think he's going to agree that IBM has terrific integration strategies . . .

You get the idea.

It isn't clear yet that information companies can sell telephones or that telephone companies can sell computers (as AT&T often reminds us). But it is likely that this single step in the direction of integration will require a great deal of redirecting and refocusing before an integrated Rolm-IBM strategy emerges from the mist.

IBM will need to make sure that product, people and customer energy don't dissipate as they figure out, once again, what it is selling and to whom.

CHRIS DEMAREST

Wohl is president of Wohl Associates in Bala Cynwyd, Pa., and editor of "The Wohl Report on End-User Computing" newsletter.

When familiarity breeds respect: Viewing MIS training as a resource

READER'S PLATFORM

ROBERT HARGROVE

The people responsible for MIS training are pretty easy to spot. They're the ones who seem to spend an inordinate amount of time at the copy machine, pop up once a year with a needs-analysis form querying you on training and seem to constantly complain about the difficulty of providing training when students are jerked out of class because they are needed on another emergency project.

Are these people doing your organization any good, or are they simply a necessary nuisance that fulfills promises of training and continuing education to new job applicants?

After all, most of us really learned our professional skills on the job, not in a classroom or gazing at a VCR. Is your department getting anything useful from trainers and, if so, how do you measure the benefits?

These two questions can be answered by posing one other question first: How are the trainers being managed? There are several approaches. One is the guerrilla school of training in which the trainer is either outside the management flow or only tangential to it, so that he becomes aware of a training need only after the fact — after the purchase of a new software package, for instance, or a new fourth-generation language or PC.

This school is typified by managers who wholeheartedly support training as long as it doesn't take any time, perhaps hoping for a CICS pill the student could take, preferably on his own time, that would immediately elevate him to expert status.

This school frequently pits the trainer against everyone else. He is seen by management as a sort of pied piper, luring people away from their jobs; he is seen by students as just someone else making a demand on their time; and perhaps he even sees himself as a conveyor of contraband, a raincoat-clad figure whispering in the hallways, "Psst. Wanna see a cassette?"

It is admittedly tricky to measure a program's success. Many departments equate it with growth, as in, "Before Mary took over, there was hardly any training done at all. Now we have five VCRs, more than 2,000 tapes, interactive video disks and people working full-time just to help her administer it all."

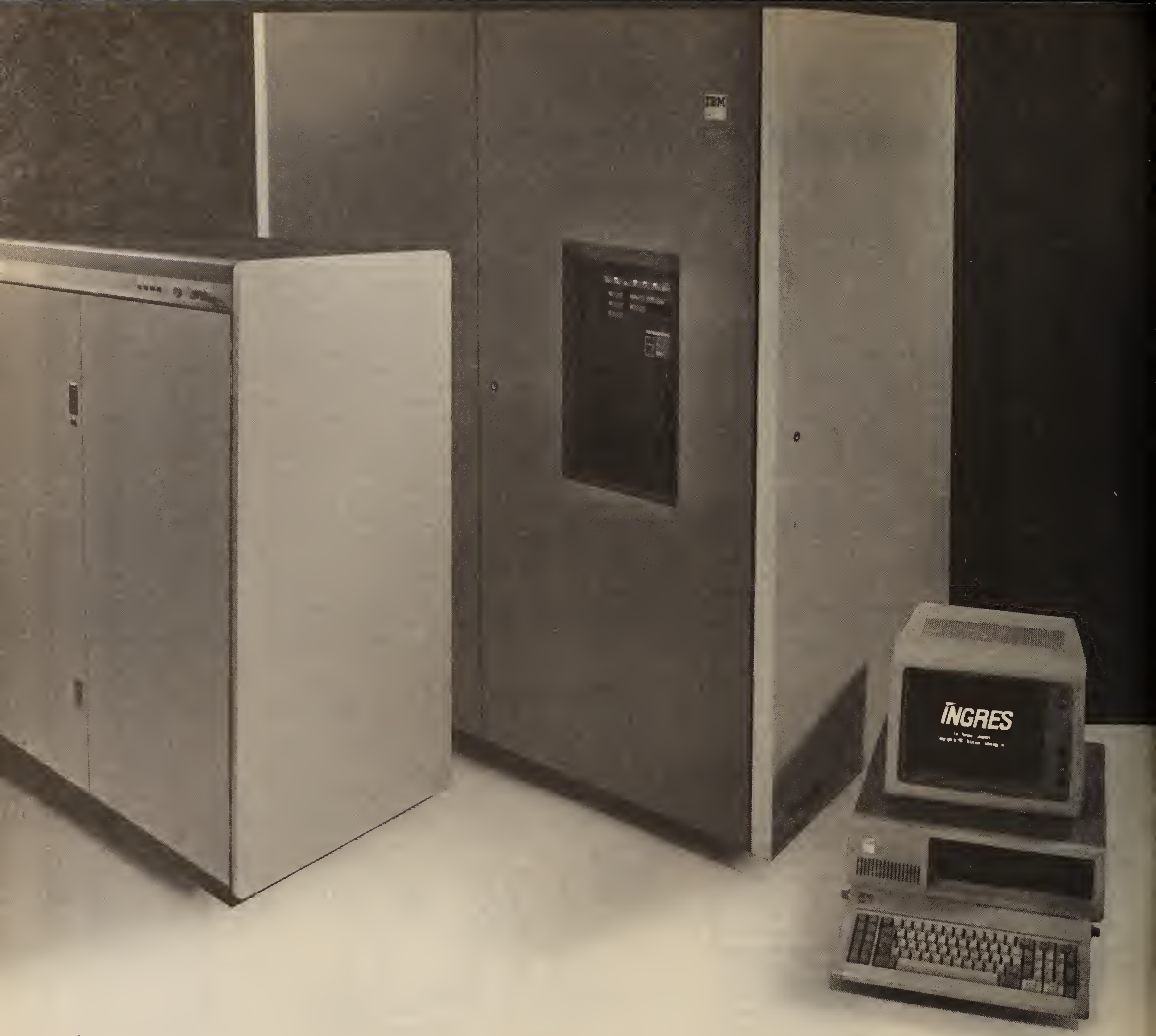
But while we all may be happy for Mary, is anybody learning anything? Are fewer errors made? Are people using the right tools for their projects? Is the product or service notably improved, along with morale? Or have you just added another layer of bureaucracy, a showpiece that can be trotted out periodically to verify the organization's commitment to people?

There is another school of thought quite different from the guerilla school. This approach maintains that the trainer is a departmental resource that, as any other position, provides no benefit unless it is properly managed and employed.

This school includes the trainer in the management nexus so precious time spent researching, developing and delivering courseware is not conducted in an ill-conceived and haphazard manner, but rather meshes with corporate plans. This school realizes that ill-managed (or unmanaged) training drains needed resources, damages morale and needlessly creates a departmental albatross.

Using those people whose primary job is communicating may not only tap a hidden resource, it just makes good business sense. After all, you're already paying for it.

Hargrove is security and contingency planner within the data processing department at the University of Texas's Health Science Center at Houston.



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SOFTWARE & SERVICES

SOFT TALK

Charles Babcock

IBM uncorks SAA genie

In its announcement of Systems Application Architecture (SAA), IBM stole a march on its competitor, Digital Equipment Corp., without getting out of bed. Does DEC have software that runs across the range of its hardware? Well, so will we, IBM seemed to be saying in the March 17 announcement.

Let's take a look at this beguiling announcement for both what it said and what it didn't say.

Two pieces are recognizable as accomplished fact. With LU6.2, Systems Network Architecture (SNA) and Document Interchange Architecture, IBM can already claim to have common communications support. IBM also has common applications — not very many but still enough to provide an example of what the company is intending.

The Personal Services office applications run on IBM Personal Computers and System/36s and 38s as well as 370 mainframes, even if the main thing the applications have in common is their name. "To use them

Continued on page 24

CAD data tools go unwanted

BY ROSEMARY HAMILTON
CW STAFF

Computer-aided design (CAD) vendors have been rolling out data management products in unprecedented numbers recently, but many large CAD users are saying "No thanks."

To these users, the new wave of products represents solutions that are either too little or too late. For years, CAD data management has been the user's problem, because vendors provided few data management tools. Having relied on either homegrown or customized systems, many users are now finding that the latest offerings are not good enough to make them switch.

"When you talk about data management, graphics systems were never that good," says Keith Oldfield, a CAD manager at the radar systems equipment division at Raytheon Co. "Consequently, you had to use your own means."

"Vendors are just beginning to address this area," says Elizabeth Hiechler, an analyst at Management Roundtable, Inc. and managing editor of its "CAD/CIM Alert" newsletter. "When they offer full [CAD data base] systems and offer them at a good price, the users will opt for them," she says.

Tough customers

In the meantime, it seems the users will be tough customers when it comes to the current lineup of data management products. "The problem now is if users have already developed a system, it's difficult to convince them to switch from something they're familiar with that satisfies their needs," says International Data Corp. analyst Vicki Brown.

Such is the case at General Dynamics Corp., where a customized system was recently installed.

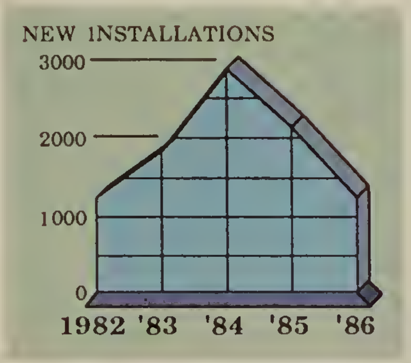
While the data base management system was being developed, General Dynamics kept abreast of vendor activities but did not come across a worthwhile system, according to Doug Lewis, director of information systems technology integration. "We have been watching the vendors, but for the most part, they are offering file managers for just homogeneous systems," Lewis says.

Continued on page 26

Data View

4GLs installed on IBM mainframes

Fourth-generation languages experienced high growth rates in the early 1980s but throttled back in 1985 and 1986



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CW CHART: SUSAN ALDAM

4GL-DB2 link shaky

BY CHARLES BABCOCK
CW STAFF

WASHINGTON — Using a fourth-generation language with IBM's DB2 offers a rare combination of flexibility and ease of use, but the match is rarely perfect, and users often do not know how their language is extracting data.

Users of On-Line Software International's Ramis Information System, D&B Computing Services's Nomad2 and Information Builders, Inc.'s Focus cited the results they encountered with DB2 at a March 23-24 conference here.

Shaku Atre, whose Rye, N.Y., consulting firm staged the conference, said many early DB2 customers want to use the data base to provide marketing representatives with customer information that has been difficult to get through nonrelational data bases.

In effect, the fourth-generation language retrieves data from DB2 through DB2's Structured Query Language interface, she said. Unpredictability in that interface is one of the main concerns of users of the early

Continued on page 24

Uccel stops developing Synova

DALLAS — Uccel Corp. is dropping development of Synova, an interface for data center management tools, after finding the first component is a success by itself.

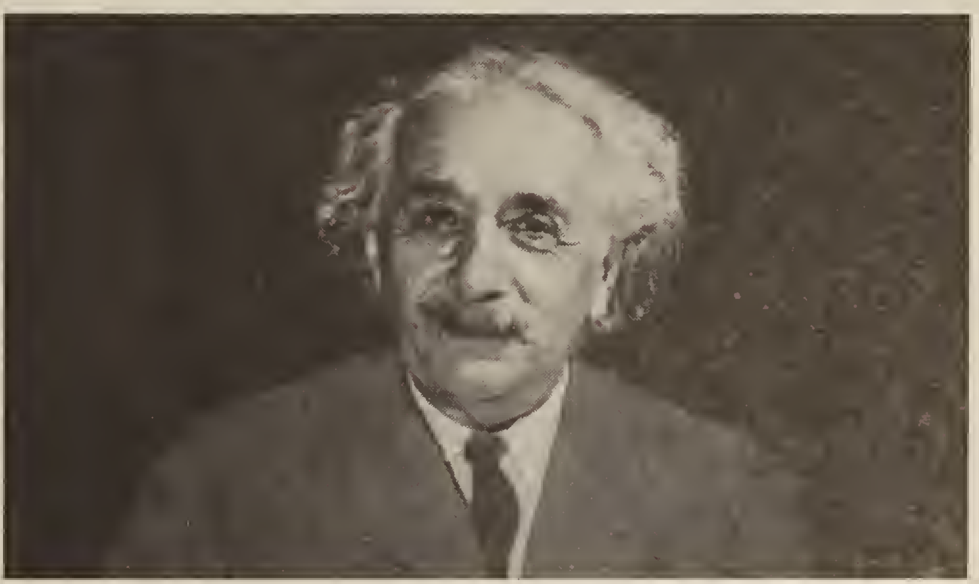
Synova Session Services, formerly known as Nova-log, became available last year and was intended to be the first of three components.

Peter J. Barris, general manager of Uccel's Systems Software Division, said 50 copies of Session Services sold in December 1986 alone and that Uccel believes it has the potential of becoming the market leader and wishes to put development resources behind it.

Focusing on Session Services will result in curtailing further development of Dialog and Communication Services, the two remaining components of Synova, Barris said.

Inside

- Goal Systems International offers a file system that allows multiple simultaneous read-and-write access to CMS minidisks. Page 30.
- Execucom adds a version to its corporate decision support software. Page 30.
- Pertaine Systems announces a documentation system for the HP 300 series. Page 30.



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4GL-DB2 link

CONTINUED FROM PAGE 23

fourth-generation language and DB2.

Gary Moskowitz, assistant vice-president of Bankers Trust Co. in New York, said his bank queries DB2 via Focus. In order to judge the effectiveness of the queries, the company formulated three tests and ran each with IBM's Query Management Facility (QMF), Focus and Focus working in conjunction with Syncsort, Inc.'s sorting utility.

A simple retrieval query via Focus consumed seven million service units, a standard measure of CPU usage at Bankers Trust, compared with 12 million consumed by QMF. Moskowitz concluded that QMF writes to a temporary file then reads the data again to deliver it to the printer. Focus delivers records straight to the printer, he said.

Sorting function handed off

In the second query, a nonindexed sort of data, Focus required 14 million service units, compared with 12 million required by QMF. The Focus-Syncsort combination produced results with 11 million service units. From this query, Moskowitz concluded that QMF hands off the sorting function to DB2 address spaces, which do it efficiently, but that Syncsort can beat them.

In the third query, a combination sum and sort by nonindexed fields, Focus performed both operations in one pass, using four million service units, compared with QMF's seven million on two passes and the Focus-Syncsort combination's six million. Moskowitz concluded that Focus "looks very good" when operations are combined. Syncsort "can't overcome the handicap of double file input/output," he said.

Blue Cross/Blue Shield of New Jersey reportedly is consolidating six IMS data bases into a DB2 data base that will be composed of eight tables, one containing 30 million rows. With the consolidated data base, Blue Cross/Blue Shield will be able to perform new actuarial functions via Ramis. The system will carry the relatively light transaction rate of 500 queries a month, said Edward Williams, chief information officer.

SAA genie

CONTINUED FROM PAGE 23

across hardware environments, you have to stand on your head [with one machine], and over here [with another machine], you have to stand on your left foot with your finger in your ear," one observer said.

The other two pieces of SAA represent new and evolving concepts. IBM wants to see a common user interface used by software developers to maximize end users' skills.

The standards named in the fourth piece, common programming interface, however, should arouse the most curiosity. IBM says that if programmers use the proposed American National Standards Institute (ANSI) standard C language, then one day, their programs will run on many IBM machines. IBM also acknowledged as standards ANSI Fortran 77 and ANSI Cobol 85. "We think it's grand. We think it's wonderful," said Philip B. Ross, vice-president of Management Science America, Inc.

There was a noticeable absence, however, of any System/36 or 38 programming language in the new standards. And while IBM's backing of Cobol 85 puts the company behind the latest ANSI standard, IBM's implementation, VS Cobol II, was designed to take advantage of the 31-bit address space of MVS/XA. And what about users of VSE? There's not much for them in the SAA announcement, unless they were looking for an incentive to migrate to MVS/XA.

In addition, Ross raised a question about what IBM didn't say regarding SAA. The architecture's stated intent is to provide consistent applications across hardware environments, but the largest hardware environment, the 370, consists of a variety of software environments.

Within the 370 family are a number of teleprocessing monitors. Time Sharing Option is noted for efficiency, so it's a likely survivor. CICS is used with DB2. Since IBM named both ANSI-standard SQL and IBM Structured Query Language, used with DB2, as SAA standards, CICS will likely survive as well. The Conversational Monitor System, as a widely used development environment under VM, is another likely survivor. But what about IMS/Data Communication (IMS/DC)? As IMS recedes into a specialized Fast Path role, does IBM want to continue supporting a monitor reserved for a handful of customers? Ross asked. The SAA announcement responded to such questions with baffling silence.

In another vein, IBM has touted Cross System Product (CSP) as the company's version of a fourth-generation language and a strategic product. The SAA announcement wasn't silent on CSP; it dismembered it. CSP may be strategic, but how long will IBM maintain it?

IBM and others have made the analogy that SAA is like SNA, which was announced 13 years ago. In this sense, SAA is a narrowing of alternatives to give the industry a common set of standards. But, if you are committed to VSE, IMS/DC or CSP, the architecture may prove a funnel as well, forcing users away from a broad selection of products toward only those IBM chooses to support.

Babcock is *Computerworld*'s senior editor, software & services.

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The White House would neither confirm nor deny reports that Avatar has agreed to serve as a go-between in talks between IBM and non-IBM equipment.

Initial contacts have linked Avatar not only wit IBM, but with many PCs, terminals and peripherals from non-IBM speaking countries.

When asked if the Avatar connection had spread beyond White House circles, a high ranking official was quoted as saying, "It is remotely possible."

In recent weeks, White House sources have referred to the unit only as PA1000G.

Due to multi-level password security, White House officials referred all inquiries to Avatar.

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CAD data tools

CONTINUED FROM PAGE 23

CAD data management has been a sticky issue at large user sites for years. For one thing, large sites generate massive amounts of CAD data. At the Pratt & Whitney, Inc. facility in West Palm Beach, Fla., for instance, one data base alone stores 25,000 to 30,000 active CAD data files, according to Tom Heinz, supervisor of advanced CAD and computer-aided manufacturing systems.

Managing this data is also critical because of the wide-ranging applications that use common data files. A single part drawing is used by design teams and is then moved on to drafters. After revisions, it eventually finds its way to the manufacturing department. Any changes made along this route need to be recorded to lessen the chance of engineering errors.

Compounding the difficulties of CAD data management is the fact that creating a CAD DBMS is a more difficult task than traditional data base management. The majority of CAD data is graphical or geometric entities that can have complex relationships to each other.

Challenges

Given the challenges associated with CAD management, some users have designed their own systems, while others have contracted with software houses to develop systems geared toward their needs. Still others, such as a General Electric Co. steam turbine plant, rely on a combination of both.

"We are pursuing the idea to use as much vanilla software as we can when we can find it," says Laki Katronis, manager of the technical systems division of the GE steam turbine plant in Schenectady, N.Y. But Katronis added,"I don't think there are any off-the-shelf packages that don't require customization."

General Dynamics' Lewis says the primary reason his firm contracted out its CAD data base management project in 1978 was because of vendor inadequacies. General Dynamics uses a combination of Computervision Corp. equipment and IBM hardware running Cadam, Inc. software.

"The original thrust was to correct the inadequacies of the Computervision system," Lewis says. "Cadam supplied us with a centralized data base, but with Computervision, there was no way to share data across those systems."

General Dynamics selected Computer Corp. of America to write the data base management system. The project was completed at the end of 1986 and is now running at selected General Dynamics sites.

Uses outside vendors

GE's Schenectady facility also turned to an outside vendor to develop one of its two data bases. In Katronis's installation, one data base is used to store raster images of the various parts that make up a steam turbine engine and the other stores digitized part-recognition code data. The raster data base was designed by Integrated Automation in Alameda, Calif., and tailored for GE by the vendor. Installed in 1985, the system contains 500,000 drawings.

The second data base, which was installed in 1981 and contains approximately 150,000 coded parts, is based on Honeywell, Inc.'s Integrated Data System II DBMS. Katronis says additional programming was done in-house to add, for example, the ability for users to access a file by either a drawing number or by the part-recognition code.

Pratt & Whitney's Thomas Heinz oversees an entirely homegrown system. At the facility, engineers use Computervision equipment for their design work and an IBM 3090 mainframe to store and manage data.

Heinz says he would like to acquire some aspects of Computervision Product Data Manager (PDM), a DBMS, but is unable to justify a full-scale conversion. "We definitely want the PDM functionality, but we're also committed to our corporate data base," Heinz says.

Stores permanent CAD data

The corporate data base was designed at Pratt & Whitney and is used to store permanent CAD data along with other company data. A second Pratt & Whitney-designed data base is used for active CAD files. This working data base also resides on the 3090, and it allows users to search among the estimated 25,000 files and then download files to their systems.

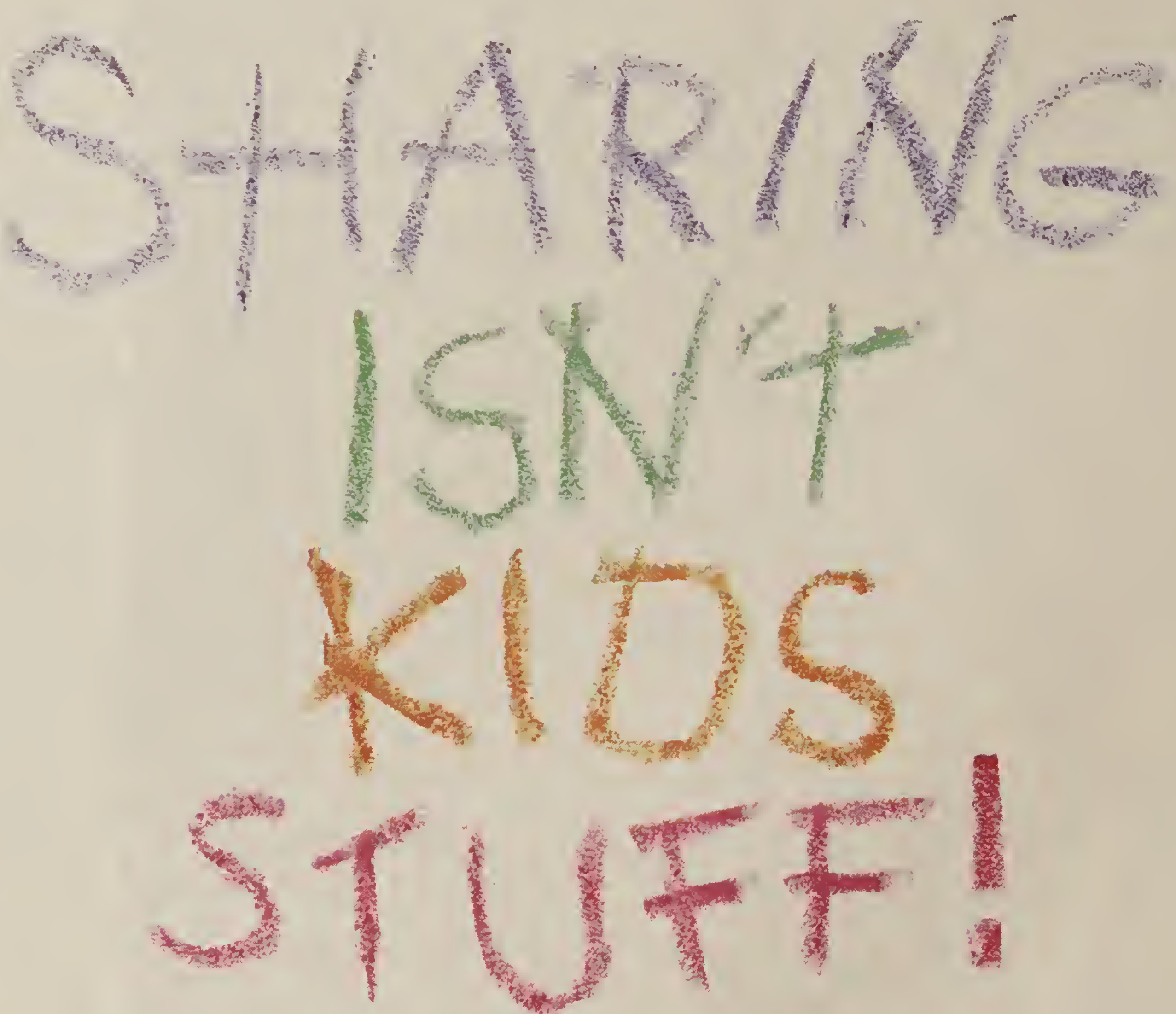
Heinz's department is currently moving from the Computervision minicomputers to the vendor's Caddstations, which are based on Sun Microsystems, Inc. 32-bit workstations. With the move to the workstations, Heinz says, users will be able to access data more easily on the 3090 via an Ethernet cable.

FMC Corp., which also uses a system developed in-house, says it plans to switch to Control Data Corp.'s EDL.

Brown says FMC, which has been using its CAD Control System since 1982, has not yet scheduled a time for the switch to take place.

Another user, an electronics systems division of a $500 million defense contractor, installed an Applicon Bravo system on Digital Equipment Corp. hardware in mid-1985. Now, according to a senior staff analyst, the firm is considering DEC's Relational Data Base to work with the Applicon software.

"I'd rather see the CAD people do their thing, and the data base people do their thing," the staff analyst says. "Then let us develop the link. We can do that."



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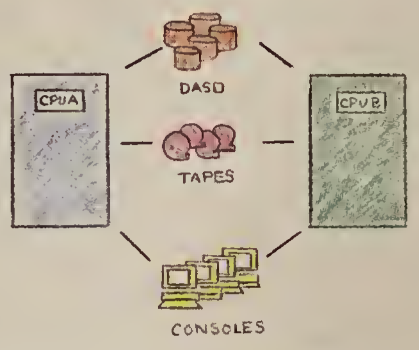

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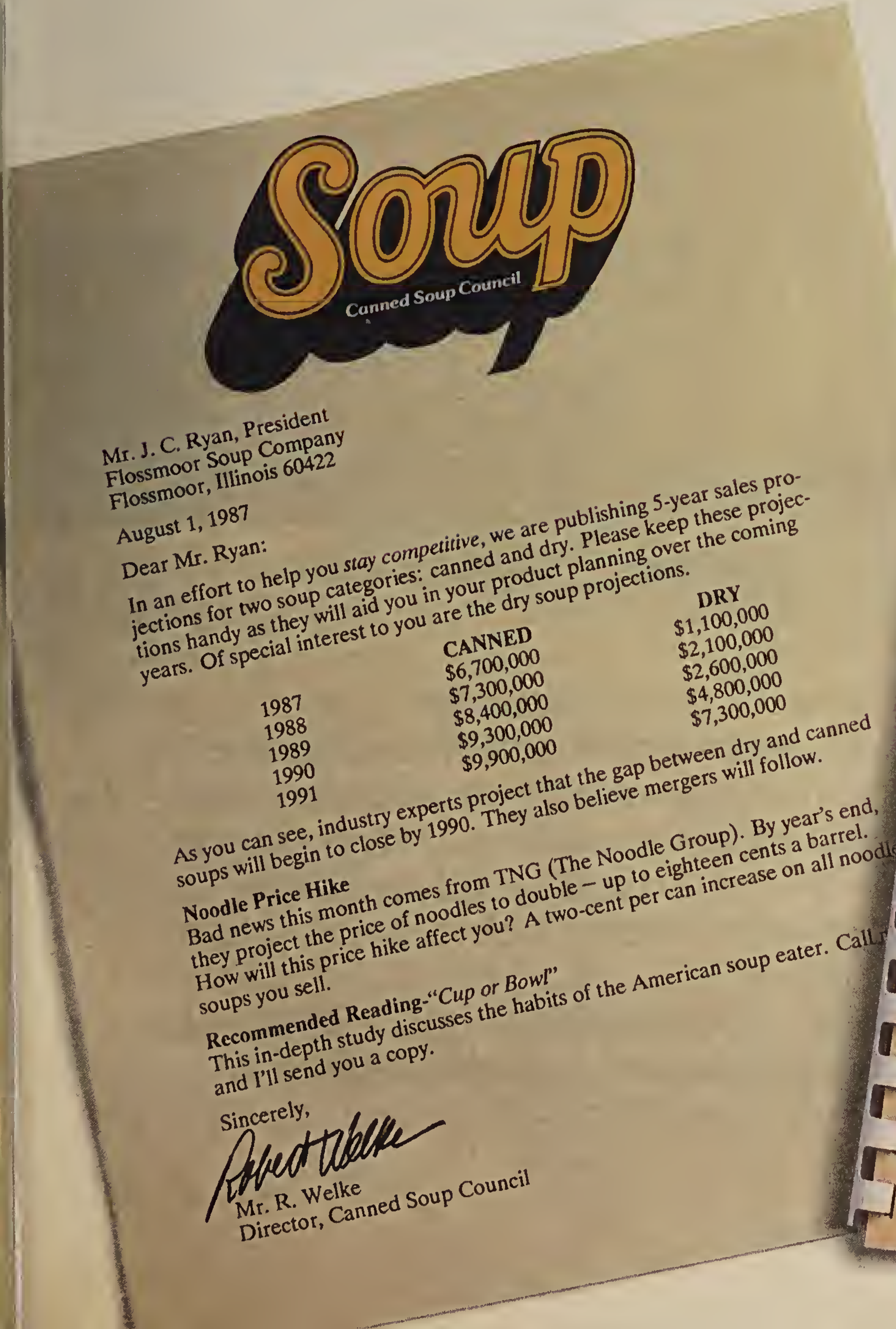

Soup

Canned Soup Council

Mr. J. C. Ryan, President
Flossmoor Soup Company
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August 1, 1987

Dear Mr. Ryan:

In an effort to help you *stay competitive*, we are publishing 5-year sales projections for two soup categories: canned and dry. Please keep these projections handy as they will aid you in your product planning over the coming years. Of special interest to you are the dry soup projections.

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1988	$7,300,000	$2,100,000
1989	$8,400,000	$2,600,000
1990	$9,300,000	$4,800,000
1991	$9,900,000	$7,300,000

As you can see, industry experts project that the gap between dry and canned soups will begin to close by 1990. They also believe mergers will follow.

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Bad news this month comes from TNG (The Noodle Group). By year's end, they project the price of noodles to double – up to eighteen cents a barrel. How will this price hike affect you? A two-cent per can increase on all noodle soups you sell.

Recommended Reading-*"Cup or Bowl"*
This in-depth study discusses the habits of the American soup eater. Call and I'll send you a copy.

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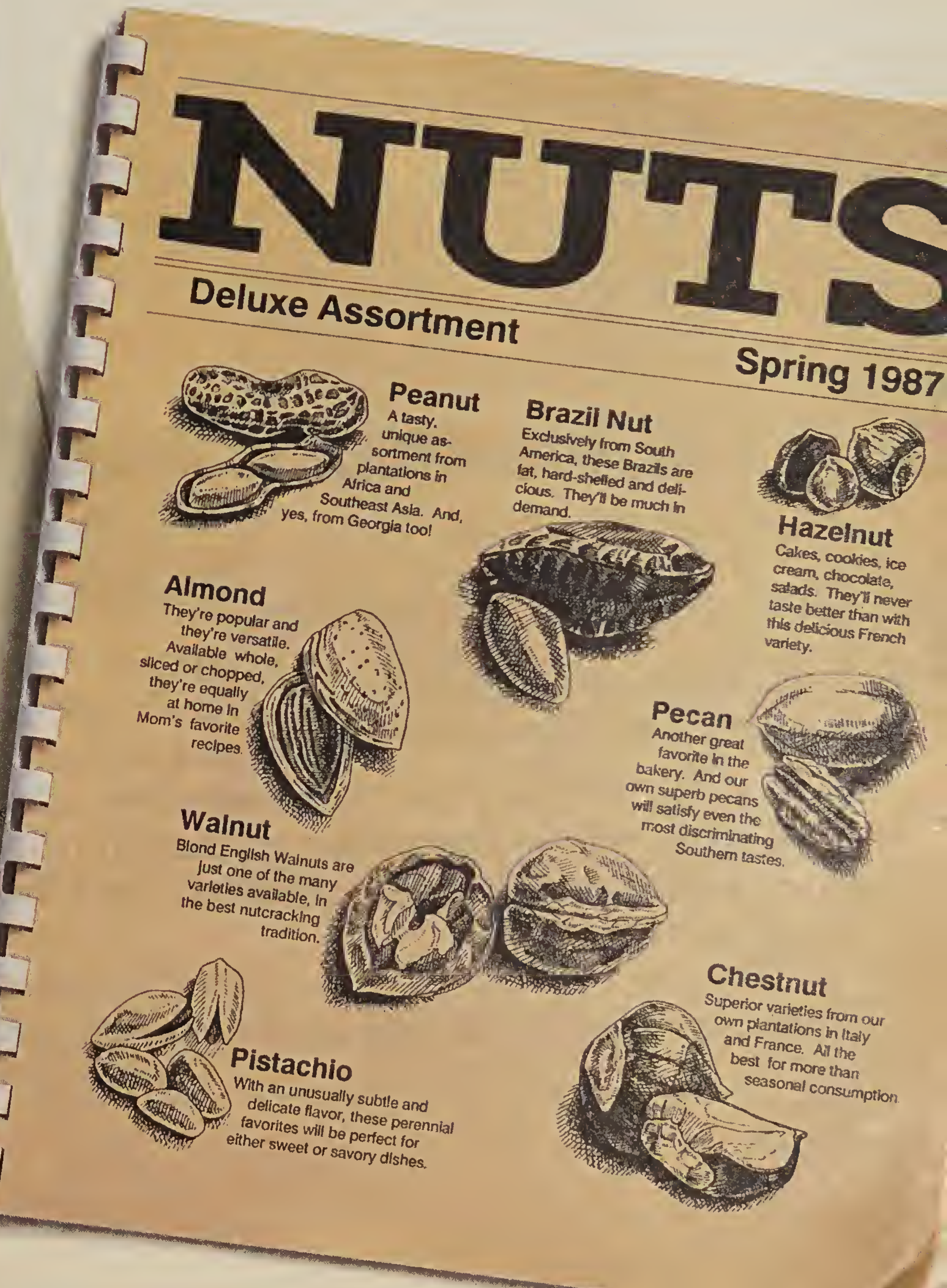
Mr. R. Welke
Director, Canned Soup Council



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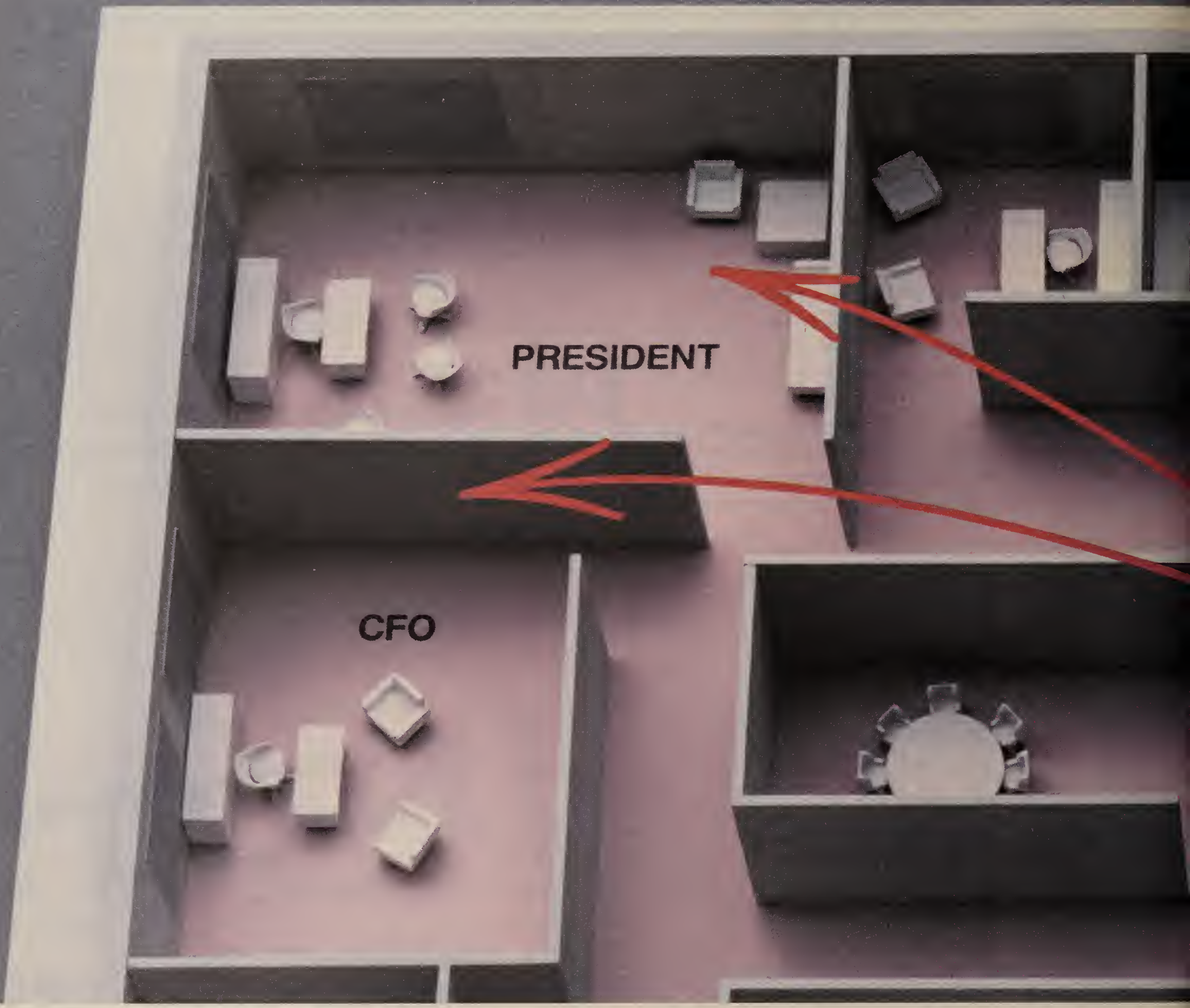

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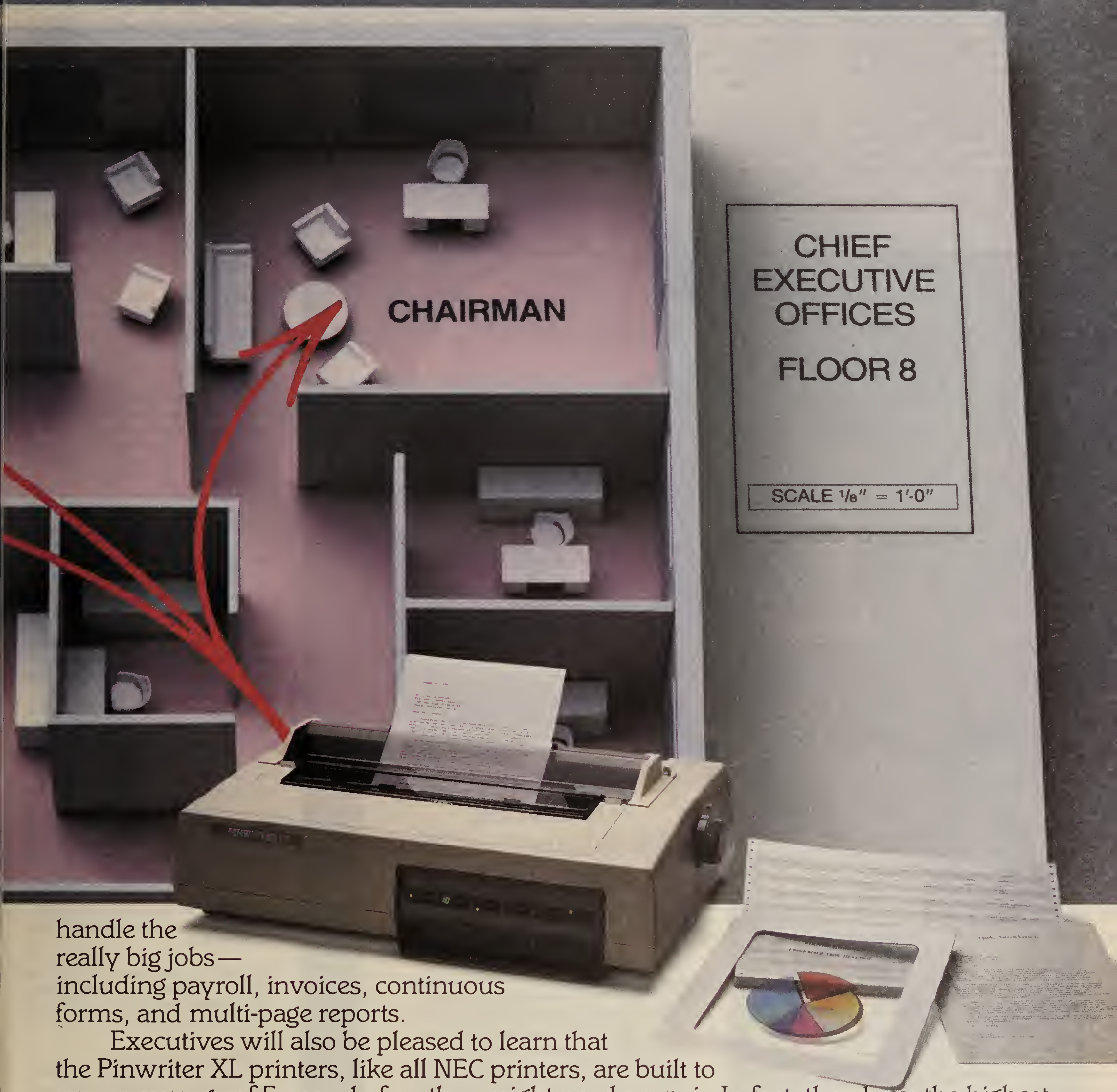

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Version 2.0 includes Prefix Update.

Prefix Resolution Plus is priced at $14,750. It is also available for monthly lease for $820.

BMC Software, P.O. Box 2002, Sugarland, Texas 77487.

Goal Systems International, Inc. has announced **Access/VM**, a multiuser CMS file system said to allow multiple simultaneous read and write access to CMS minidisks.

According to the vendor, Access/VM provides extended minidisk security that externally controls read-only and read and write access to CMS minidisks from the VM directory. The system also allows for in-storage file directory validation.

Access/VM is priced at $6,720 for a permanent license or $168 per month for a three-year renewable license.

Goal Systems, 5455 N. High St., Columbus, Ohio 43214.

Execucom Systems Corp. has announced **IFPS/Plus 3.0**, a version of its corporate decision support software.

The software is said to integrate artificial intelligence with business planning activities. Release 3.0 features a natural-language explanation facility. Other enhancements include user-definable full-screen forms, data-driven applications, improved interrogation of multidimensional models and a template library.

IFPS/Plus 3.0 is available in IBM MVS/TSO, VM/CMS, Digital Equipment Corp. VAX, Prime Computer, Inc. and some Unisys Corp. environments. Prices range from $9,000 to $85,000.

Execucom, 9442 Capital of Texas Highway N., Arboretum Plaza One, Austin, Texas 78759.

W. R. Lewis Associates has announced **PCprint Version 3** for the IBM System/34, 36 and 38 computers.

Version 3 of the software offers support for the Ideassociates 5250 Emulation Adapter; printer support and file transfer run from any session number; support for multivolume file transfer to personal computers; the ability to copy a spool file entry directly to a personal computer file; status information showing progress of transfers; and improved critical error handling from the PC.

PCprint runs concurrently with the 5250 emulation program and allows printer support and file transfer capabilities to be executed from the host at any time.

PCprint costs $375 for System/34 and 36 and $475 for System/38.

W. R. Lewis Associates, 3009 Glenvalley, Midwest City, Okla. 73110.

Software Interfaces, Inc. has announced **Orasas**, software said to provide a bidirectional interface between Oracle Corp.'s Oracle relational data base management system and SAS Institute, Inc.'s SAS system.

According to the vendor, the program offers a solution for building a data base, storing and retrieving data, analyzing data and producing reports and graphs. With an SQL select statement, users can convert Oracle tables into an SAS data set, or vice versa.

Orasas runs on IBM VM/CMS and MS, Digital Equipment Corp. VAX/VMS and Data General Corp. AOS/VS systems. Prices range from $2,500 to $7,500.

Software Interfaces, Suite 355, 13831 Northwest Freeway, Houston, Texas 77040.

Pertaine Systems, Inc. has announced the **Explain/3000**, a documentation system for the Hewlett-Packard Co. 300 series of computers.

Explain/3000 is an on-line documentation package said to allow users to produce documentation to accompany software. It provides functional outlines and content recommendations to help organize manuals. Features include automatic search, comprehensive descriptions of functions in progress and a note-pad feature that allows users to keep notes within the manual.

Explain/3000 costs $5,000.

Pertaine Systems, Suite 100, 805 Veterans Blvd., Redwood City, Calif. 94063.

Services

M. Bryce & Associates, Inc. has announced its **Pride-Data Base Engineering Methodology** (DBEM) for the design and development of corporate data bases.

Pride-DBEM is said to use a four-data model approach, including an application logical model for a specific system, an enterprise logical model, an enterprise physical model and an application physical model. The integrated models are said to be conceptual representations of facts and events that are required to operate and manage an enterprise and are independent of any physical implementation.

Pride-DBEM consists of six phases that are hardware and software independent.

The primary purchase price for Pride-DBEM is $25,000.

M. Bryce & Associates, 777 Alderman Road, Palm Harbor, Fla. 33563.

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Announcing Microsoft Operating System/2.™

A new standard for the next generation of personal computing.

Last week we made an announcement with far-reaching implications for the future of personal computing: Microsoft Operating System/2.

We had a vision for the future, and for the operating system and hardware that could deliver it.

With the arrival of MS OS/2™, that vision has become a reality, making it possible for the next generation of computing to advance in ways that are essential to our customers and to the growth of personal computer technology.

MS OS/2 represents a major step forward from our original MS-DOS® operating system—the industry standard that now runs on more than 10 million machines worldwide. MS OS/2 works at the heart of the newest personal systems, as well as with existing computers built around the Intel® 80286 and 80386 microprocessors.

What's more, most of the MS-DOS applications designed for IBM® PCs and compatibles will continue to run under MS OS/2.

Microsoft will be making MS OS/2 available to software and hardware manufacturers, who will now be able to develop a broad new range of customer solutions, including advanced personal workstations and integrated offices. And with the introduction of the Microsoft Operating System/2 LAN Manager, MS OS/2 will serve as the foundation for connectivity between personal computers.

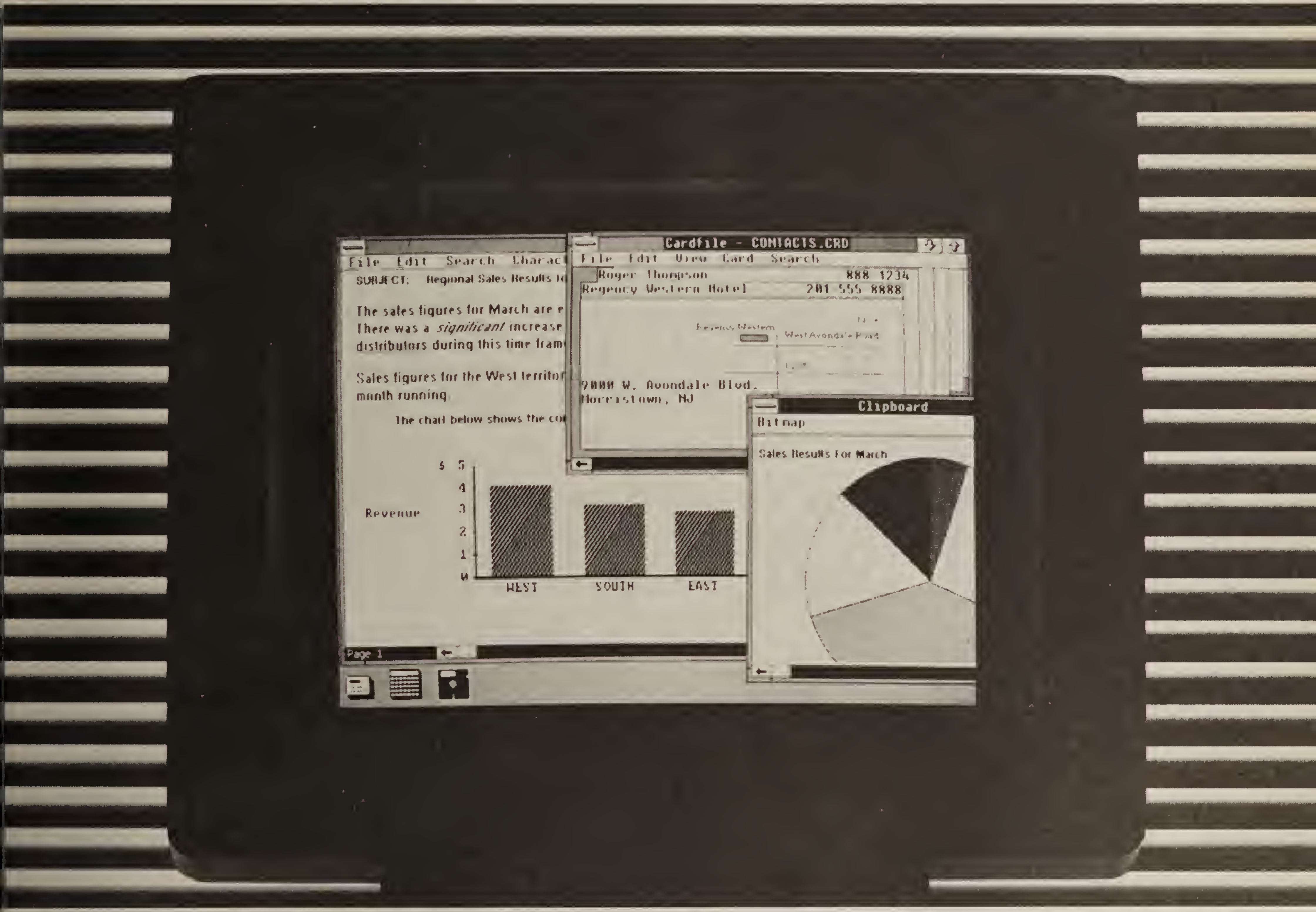
MS OS/2: an open system resulting from IBM and Microsoft working together.

Windows presentation manager:
The MS OS/2 standard that will change the way you look at computing.

The Microsoft® Windows graphical user interface was considered visionary when we announced it in 1983. Now that same kind of power is built into the standard, through the Microsoft Windows presentation manager that's included as part of MS OS/2.

Microsoft has been a pioneer in the development of graphical user interface software because we believe that it makes people more productive, more quickly. The Windows presentation manager allows computer users to take more intuitive control of their machines. You can see the difference for yourself.

This important innovation sets the foundation for a whole new era of applications, from desktop publishing to integrated programs that will allow you to combine spreadsheets with text and high-quality graphics.



SUBJECT: Regional Sales Results fo

The sales figures for March are e
There was a *significant* increase
distributors during this time fram

Sales figures for the West territor
month running.

The chart below shows the co

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Sales Results For March

Microsoft Operating System/2. Microsoft Operating System/2 LAN Manager. Microsoft Windows presentation manager. Important announcements from Microsoft that will be key to how you think about personal computing for years to come.

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The power of^2 has been working for you for six months. Here's what it's done for you lately.

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The B 38 workstation incorporates Intel's new 80386 microprocessor to add enormous power and speed to networks of B 25 series intelligent workstations, IBM PC compatible microcomputers, or combinations of those. The B 38 is also capable of working within either A Series or 1100 Series mainframe environments.

The new V 510 and V 530 mainframe computers greatly extend the power of that product line. With the addition of these models, it's now possible for customers to start out with a moderately powerful mainframe and increase power to match their needs by more than nine times, without needing to stop for software conversions.

Responsiveness to the needs of customers, current and future, is a major source of the strength and innovation that Unisys brings to the computer market today. That responsiveness is the basis of the power of^2.

UNISYS
The power of^2

MICROCOMPUTING

SMALL TALK

William Zachmann

Bad graphics rest in peace

The graphics capabilities on IBM's new microcomputers, announced last week, will help accelerate the movement to higher resolution color graphics on Microsoft Corp.'s MS-DOS system, based on the Intel Corp. 8086 and 8088 architecture. In fact, the days of crummy graphics as defined by the old IBM Color Graphics Adapter have long been numbered.

A spectacular demonstration of what is already available is found in ZSoft Corp.'s Publisher's Paintbrush. Running on my NEC Corp. APC IV with a NEC Multisynch monitor and the Video-7, Inc. EGA+ or the Quadram Prosynch cards, Publisher's Paintbrush brings attractive color graphics to the MS-DOS world.

A freehand "paint" package priced at $285, Publisher's Paintbrush can be used to create Apple Computer, Inc. Macintosh-like graphics in color on IBM Personal Computers and compatibles. Cleverly described by ZSoft Chairman Mark Zachmann (not related to this writer, by the way) as WYGIWYE — or What You Get Is What You Expect — Publisher's Paintbrush combines excellent program design with support for a wide range of I/O devices.

Continued on page 38

IBM widens PC service, support

Will acquire and replace faulty non-Blue products tied to own micros

BY DAVID BRIGHT
CW STAFF

RYE BROOK, N.Y. — With a newly expanded Personal Computer Service Support program, IBM recently said it will replace selected non-IBM products when the products fail.

The key difference between this offering and IBM's previous Service Support policy is that IBM, instead of the customer, will attempt to obtain the replacement parts.

The previous full-service maintenance offerings provide for maintenance and replacement of specific non-IBM products, but under the Service Support program, customers may select a wide range of non-IBM products from several generic groups. The Service Support program covers product replacement, not full-service maintenance.

'Broader support range'

IBM is expanding this program "as a convenience for our customers to broaden the range of IBM support available to them," an IBM spokeswoman explained. The previous maintenance and service support offerings are still in effect, she said.

Under a Service Support offering announced in May 1986, IBM can "remove or disconnect" a part that does not carry the IBM logo and replace it with a similar part supplied by the customer. And, according to an announcement made last month, National Service Division representatives may remove or disconnect non-IBM peripherals and boards that cause system failures and replace them with non-IBM spares acquired by IBM.

When the replacement of such a part is necessary, "IBM will make reasonable efforts to obtain selected commercially available non-IBM products," the company said. If IBM cannot obtain the identical part, with the customer's agreement the firm will attempt to obtain a similar non-IBM part.

Continued on page 38

UPDATE

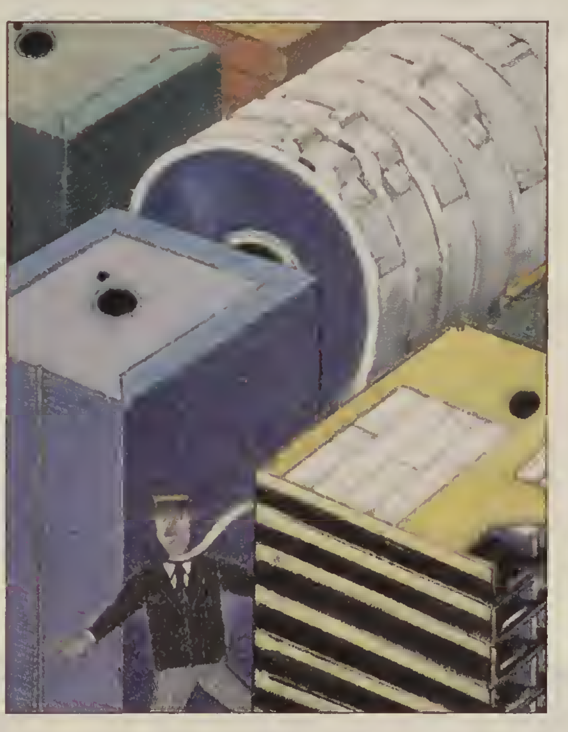
Frontiers of PC storage

BY IAN WARHAFTIG
and BRUCE POLSKY
SPECIAL TO CW

Personal computer managers, unite. You do have a choice when it comes to mass storage devices. Even though traditional Winchester disk drives continue to dominate the PC storage arena, newer technologies — like the Bernoulli Box, mini-cartridge tape drives and expansion-slot Winchester drives such as the Hardcard — are providing ingenious ways of meeting specialized data storage needs.

Are your PC users looking for an easy upgrade to hard-disk storage, unlimited mass storage or reasonably priced backup products for lower capacity Winchesters? What follows are the stories behind the burgeoning

Continued on page 40



Truebasic: big power, small price

This is the second in a four-part series on Basic products for IBM Personal Computers and compatibles.

BY T.A. ELKINS
SPECIAL TO CW

Some innovative and original work in interactive computer use started in the early '60s at Dartmouth College. At that time, the original Basic interpreter was developed, often through the work of some gifted undergraduates. During the current decade, two of the faculty members who directed much of that previous pathfinding work have collaborated on a new program, called Truebasic, from Truebasic, Inc. in Hanover, N.H.

Both the public Truebasic literature and the firm's press material condemn the current Basics with such descriptions as "street Basics." A reader sees a clear, intentionally presented image of Truebasic as a knight in armor, battling the vile corrupters of this grand old system.

If no one took this state of affairs seriously, it would be antic; but the issue is taken seriously. The reality is that the many millions of copies of IBM's Basica and Microsoft Corp.'s GW-Basic have set a standard that can only be changed in the marketplace.

Continued on page 37

Inside

- Telesensory Systems announces portable braille computer. Page 42.
- Microsync adds slotless clock/calendar. Page 43.

UPDATE: INFORMIX-TURBO

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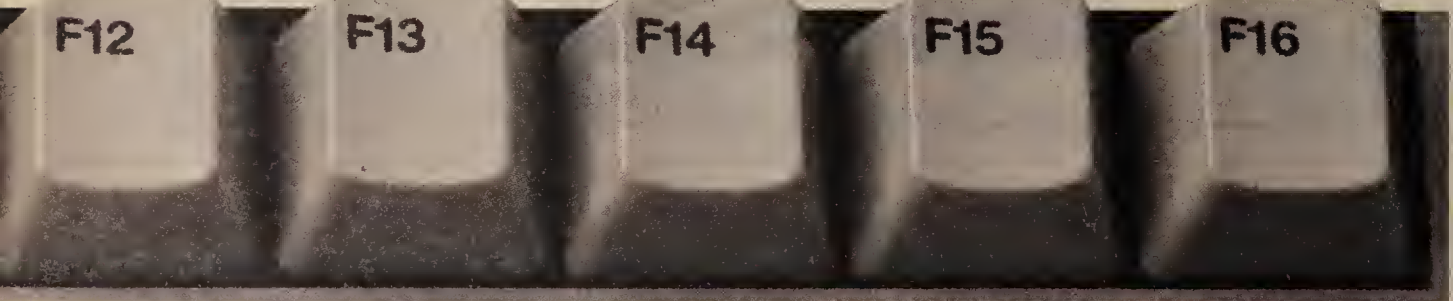
Full-size keyboard	Yes	No



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Truebasic

FROM PAGE 35

This situation is regrettable, because Truebasic is an excellent programming language at a remarkably modest price. The language is a massively refined, expanded and unconstrained improvement on GW-Basic; it is just not quite Basic.

Truebasic, however, is the winner of top honors as my Best in Show among Basics.

Technically, Truebasic is a weakly typed incremental compiler. For the most part, a variable or array part is either a number or a string — a convenient feature.

Fast runner

Truebasic can do some syntax checking as input is made. With the run command, the user can compile satisfactory lines into a special pseudocode that is interpreted as the system runs. This procedure has proved itself more efficient and a good deal faster than a standard interpreter; so efficient and fast, in fact, that Truebasic equalled the floating-point performance of even the fastest of the Basic compilers I tested. The user can precompile code in memory and store it on disk for a bit more speed, but then he cannot edit the code.

In addition to amazing speed, power and use of the full DOS space, Truebasic has an excellent built-in graphics system, a customizable user-library system with a good module subsystem, a fair Help system, some recursive capability, a built-in editor and formatter and an optional runtime system.

Although Truebasic has a good system of IF/WHEN, FOR/UNTIL and other such looping operations, the language's real power comes from procedures and functions. Both of these structures can exist within a simple program, be defined at the end of a program or be separately defined in a (bought, begged or written) disk file, called a library.

The user also can compile such items to improve speed, add security and considerably reduce disk-storage requirements. These libraries can include modules to provide greater flexibility in variable control and to guarantee continuity in variable values.

The graphics system automatically recognizes the IBM Enhanced Graphics Adapter and Color Graphics Adapter and Hercules Computer Technology, Inc. cards. I have only tested the system with the Hercules Plus card, but the test was extensive, and Truebasic performed very well. I know of no programming language based on Microsoft's MS-DOS, which equals Truebasic for graphics ease, flexibility and range. One can generate pictures and store them to disk for later recall. With simple graphic forms, a limited amount of animation is even possible. Truebasic graphics are first rate.

Truebasic works well with MS-DOS, has Script files like the Batch files of MS-DOS with an autoexecute-like file capability and has Aliases a bit like the DOS Set function.

Built into Truebasic are some excellent matrix and vector handling routines. Truebasic will read, write, add, subtract and multiply appropriate vectors and matrices with single statements. These abilities are quite good, very handy and do not constitute an exhaustive list. Top marks are scored here.

As a time-saver, Truebasic has a fair built-in Help system. Unfortunately, the language does no context sensing and limits each file to one screen of data. Because these files are ASCII-based, a user can alter them to suit his needs, although the system documentation does not mention this capacity. Line numbers are optional with Truebasic.

Shortcomings

Of course, Truebasic has its share of rough edges and failures. The most important limitation of Truebasic is incompatibility with the GW-Basic/Basica standard. Moving over to Truebasic is like going from fluent Spanish to Portuguese or Italian. But there is a transition, and ordinary Basic programs will frequently not run unmodified on Truebasic.

And the documentation is disjointed — it is in two spiral-bound volumes and an update; a complete rewrite is badly needed.

The other troubles with Truebasic are fairly minor. The language is still oriented toward the required LET statement. Also, there is no floating-point print statement; all printing beyond six digits requires special PRINT USING constructs that are a bother. And the Help system is profligate with hard-disk space.

Yet taken altogether, with top marks for price, power and graphics on an IBM PC and nearly top marks for flexibility, Truebasic is a top-drawer programming language and a clear winner as my Best in Show.

Elkins is a Huntington, W. Va.-based computer and management consultant with a degree in electrical engineering.

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Rest in peace

CONTINUED FROM PAGE 35

Zoom-In and Zoom-Out features let users work with images in a manner similar to the Macintosh's Fat Bits capability, but with even greater flexibility. Users can work with the logical elements of the image in varying degrees of magnification. Additionally, users can adjust the Zoom-In and Zoom-Out ratios to achieve larger or smaller increases or decreases in the magnification of an image.

Unlike a number of other graphics composition packages, Publisher's Paintbrush lets users see the image in levels of detail and can go beyond the resolution of the output devices used for viewing or printing the image. This offers a level of control over the image that is simply not attainable with many other packages.

I/O-device support is included for a wide range of products. In addition to very good support for a variety of mouses, tablets and similar input devices, as well as for a large number of laser printers, Publisher's Paintbrush comes with device drivers for many popular scanners.

Using an interface with pull-down menus, a tools-icon palette and additional selection palettes for colors and text, Publisher's Paintbrush's user interface has the ease of use of the Macintosh or the Xerox Corp. Star.

There is also a wide selection of text capabilities. Publisher's Paintbrush offers three different font technologies. These are accessed through the text tool. Both bit-mapped and stroke fonts are available. The latter include a computer font, Old English, Euro, Greek, Light Roman, Roman, Outline Script and Swiss.

The curvilinear fonts — Outline and Swiss — can be drawn at any size while retaining their shapes. All fonts can be altered with style options that include bold, italic, underline, outline, shadow, opaque and plain.

The tool selection includes a tool used to select portions of the image and a scissors tool for cutting sections of the image for copy or subsequent paste operations. Selected portions can be rotated, flipped horizontally or vertically, color-inverted, shrunk or grown, tilted, rotated or cleared.

Other tools include an airbrush; a color eraser; paintbrushes with varying shapes and sizes; a paint roller to fill in closed shapes; curve; line; and a variety of hollow and filled, straight, rounded-box, circle and ellipse drawing tools. An Undo feature lets users go back to the image before the last operation was made upon it.

The Publisher's Paintbrush Frieze facility provides for the exchange of image data with other programs. It is also used for creating output on a wide range of devices, including printers, plotters and slide makers.

Breaking new ground

In short, Publisher's Paintbrush is a powerful, full-function program that makes it possible to do things in color in the IBM PC-DOS and Microsoft MS-DOS world that only a few years ago were restricted to the monochrome world of the Macintosh or specialized systems.

Publisher's Paintbrush is an excellent tool to be used in desktop publishing applications for creating images. It supports interfaces to popular text and page-composition software like Ventura Software, Inc.'s Publisher and Aldus Corp.'s Pagemaker and provides a complementary tool for these and similiar packages.

At the same time, Publisher's Paintbrush can be used for creating extremely sophisticated presentation graphics. In the hands of an accomplished artist, it can be used to create truly spectacular results. Yet it is so easy to use that almost anybody can create exciting material with it.

Publisher's Paintbrush is as good a program as I have seen for starting to make use of the increased graphics capabilities that Microsoft's MS-DOS system is starting to offer.

Zachmann is vice-president of research at International Data Corp.

IBM widens

CONTINUED FROM PAGE 35

The eligible non-IBM products selected by the customer must fall into one or more of 14 generic product groups and must not already be covered by an IBM maintenance agreement service.

The product groups are the following: PC XT multifunction graphics cards; PC AT multifunction graphics cards; dot matrix and nonimpact printers with list prices between $500 and $1,500; daisywheel printers and other fully formed, character-based letter-quality printers priced between $500 and $1,500; printers priced less than $500; plotters priced less than $2,000; plotters priced between $2,000 and $4,000; and monochrome and color displays priced from $125 to $637.

Other groups include internal and external modems priced between $168 and $419; diskette drives priced less than $1,000; 10M-byte hard disk drives priced less than $450; 20M-byte hard disk drives priced less than $1,000; 30M-byte and higher hard disk drives priced less than $1,000; and 20M-byte streaming tape drives priced between $499 and $995.

The selected products must not require IBM to use special tools or make modifications in order to provide service, the company said.

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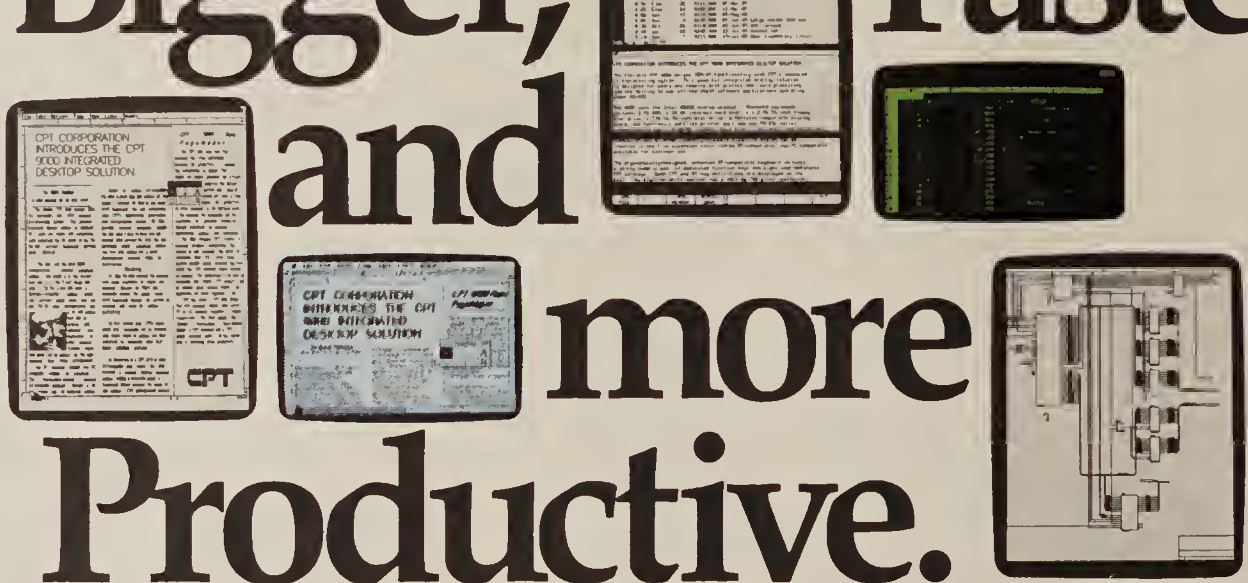

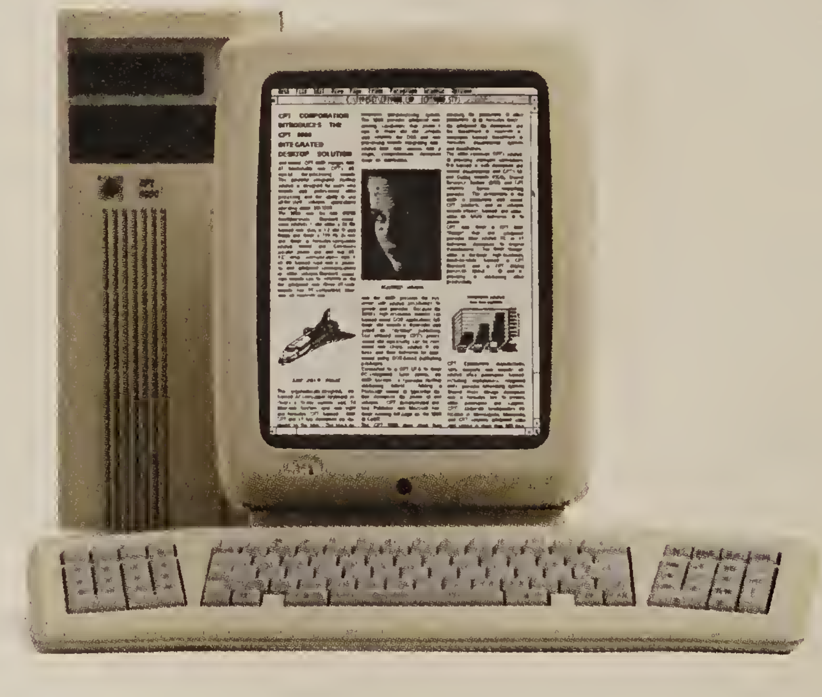

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Frontiers

FROM PAGE 35

technologies that can enhance the capacity of your Winchester storage.

Two centuries ago, Daniel Bernoulli theorized that the pressure within a fluid decreases as its velocity increases.

Little did he know that his principle would be used to explain how airplanes fly or baseballs curve — or, for that matter, that his name would adorn Iomega Corp.'s drive products.

Bernoulli Boxes

Iomega, based in Roy, Utah, accomplished no mean feat with its Alpha and Beta lines of mass storage devices — known as Bernoulli Boxes. The firm turned an idea IBM had shelved into a $125 million reality.

Bernoulli Box products offer the following advantages:

- Winchester performance. At 33-msec average access time, Iomega's 20M-byte drive, the Alpha A220H, which retails for $3,495, is comparable to several high-performance Winchesters.
- Unlimited capacity. Storage is accomplished in 10M- and 20M-byte removable cartridges.
- Backup and removability. A mirror image of primary data can be placed on a cartridge and removed from the drive.
- Security and transportability. Removable data cartridges can be stored safely and transported easily.

Despite all of these advantages, Iomega's rise to prosperity has not been easy. Nontraditional storage devices face an uphill climb in the PC world. To gain a foothold, they need to compete head-to-head with traditional Winchester technology on a price/performance basis or, as is the case with Iomega, offer an added value for which a user would be willing to pay.

A good product will not sell itself, however. For Iomega, marketing — including distributor and dealer training, loads of advertising and a bit of frenzy — originally sold the Bernoulli Box. However, recent sales figures show a company with problems (see story below).

On the bright side, this could prove to be a much different kind of year for Iomega — the year of the Beta 20. This half-height, 5¼-in., 20M-byte, removable Bernoulli drive is a remarkable product. Still, four problems stand in its way.

> TWO CENTURIES ago, Daniel Bernoulli theorized that the pressure within a fluid decreases as its velocity increases. Little did he know that his principle would be used to explain how airplanes fly or baseballs curve.

- It has taken much longer than anticipated to bring it to market. That lost time costs money that could have been better spent marketing the product.
- Development costs are high and need to be recouped in sales, placing the price tag far above that of a typical Winchester.
- Because it is nontraditional in design and cost, most PC OEMs are hesitant to sell it.
- But Iomega is being forced to sell the Beta 20 to OEMs, because it has no finished product of its own with which to package the drive. Thus, as a subsystem product, the Beta 20 would thwart sales of its 8-in. Alpha line and create a loss of manufacturing and inventory investment.

Despite these obstacles, the indications are positive that the Beta 20 has a future: Mountain Computer, Inc., a Scotts Valley, Calif.-based OEM, began an aggressive campaign with the $2,195 Micro Bernoulli. Mountain's sibling company, Bering Industries, Inc., has come into the act with its Totem Beta 20 product, which costs $1,495 with a single drive and $2,295 with a dual drive. Also, Tandy Corp. is putting the full muscle of Radio Shack distribution behind a Beta 20 offering.

The Hardcard

The expansion-slot Winchester drive is perhaps one of the most revolutionary mass storage products to be introduced for the personal computer in recent years. Mainly because of its easy installation, its potential is to make systems integrators rethink the way mass storage is configured.

Milpitas, Calif.-based Plus Development Corp. introduced the idea of the expansion-slot Winchester drive at the National Computer Conference in Chicago in June 1985. At that time, Plus Development, a subsidiary of Quantum Corp., unveiled its 10M-byte Hardcard and thereby provided solutions to six common PC problems:

- Ease of installation. The product is as easy to install as a graphics or memory board. There is no need to take the PC to the dealer.
- Low power requirements. The Hardcard was designed to work with the original IBM Personal Computer's 65W power supply but is not limited to it.
- Space savings. By slipping into a standard PC bus slot, the Hardcard is virtually a space miser. It has no external footprint.
- Flexibility. The Hardcard saves old 10M-byte IBM Winchesters from retirement by creating a new upgrade path.
- Availability. It is carried by almost every major computer retailer.
- Affordability. Costing about $695, the Hardcard's features make it a very attractive buy.

In a repeat performance, Plus Development introduced its

Maintaining holds on niche storage markets

The Bernoulli Box, the expansion-slot Winchester drive, the mini-cartridge tape drive — each of these personal computer mass storage-device markets is currently dominated by one vendor. Why? How long will the supremacy last? What is the future of these technologies as indicated by the vendors' past performance?

- **Iomega Corp.** Iomega is king of the Bernoulli Box. In the early 1980s, the product sold like hotcakes — and the company's growth corresponded. More recently, however, Iomega's rapid growth clouded.

Compared with previous years, 1986 was a disappointment. While at year's end total revenue was $125.9 million — up from $115.5 million from the year before — income dropped from $14.9 million in 1985 to $6.4 million in 1986.

The company's most recent announcements were not for new products but for organizational restructuring toward new financial realities. Throughout 1986, the company reduced advertising and trade show appearances. Last December, Iomega laid off 11% of its total staff, including 17% of the managerial staff.

While Iomega remains profitable, it must take steps to stay competitive. The firm would benefit greatly if it could squeeze its price/performance to compete with its chief competition, the Winchester.

- **Plus Development Corp.** Hats off to Plus Development and its Hardcard expansion-slot Winchester drive. In 18 months, Plus Development has become a $50 million organization.

But most analysts agree that the market for the expansion-slot Winchester drive is time-limited. As more drives find their way into the PC before end-user sale and more aftermarket products do the same, the market will slowly shrink.

Translated into business realities, this means Plus Development needs new products not simply to grow bigger but to sustain its growth. The firm will probably finish this year with at least $60 million in the coffer. But as for 1988, who can say?

Should Plus Development diversify? Should it offer other products to enhance the PC? Can it provide higher capacity, same form factor, faster access time and IBM Personal Computer AT compatibility? Be assured that Plus Development has some of the best minds in the industry working on that very quest.

- **Irwin Magnetics Systems, Inc.** Irwin Magnetics began shipping mini-cartridge tape drive products in early 1985. In 1986, the company was the leader in the overall worldwide market by a landslide, shipping 100,000 mini-cartridge tape drive units, with a 93% market share. But there are other contenders making headway into Irwin Magnetic's territory (see chart).

OEM mini-cartridge tape mechanism worldwide forecast

Units shipped

20M-byte or less, 3M Corp. DC-1000- and DC-2000-compatible:

Vendors	*1985*	*Growth*	*1986*	*Growth*	*1987*	*Growth*
Alloy Computer Products, Inc.	0	—	300	—	2,000	567%
Irwin Magnetic Systems, Inc.	43,000	—	99,000	130%	126,000	27%
Tallgrass Technologies, Inc.	0	—	200	—	8,000	3,900%
Total	**43,000**	**—**	**99,500**	**131%**	**136,000**	**37%**

Greater than 20M-byte, DC-1000- and DC-200-compatible:

Vendors	*1985*	*Growth*	*1986*	*Growth*	*1987*	*Growth*
Alloy	0	—	2,000	—	15,000	650%
Archive Corp.	0	—	50	—	20,000	39,900%
Irwin	0	—	1,000	—	12,000	1,100%
Mountain Computer, Inc.	0	—	300	—	17,000	5,567%
Wangtek, Inc.	0	—	0	—	14,000	—
Other	0	—	4,350	—	40,000	820%
Total	**0**	**—**	**7,700**	**—**	**118,000**	**1,432%**

INFORMATION PROVIDED BY INTERNATIONAL DATA CORP.

Of the 118,000 OEM mini-cartridge tape drives with greater than 20M-byte capacity that should sell this year, only 12,000 will be sold by Irwin Magnetics — a 10% share. Alloy Computer Products, Inc., Archive Corp., Mountain Computer, Inc. and Wangtek, Inc. will combine to master the market, garnering 56% of the market.

Perhaps part of the reason others are gaining ground is that Irwin Magnetic's physical tape format is proprietary, while the contenders are adopting the Quic-40 standard, based on formats set up by the Quarter-Inch Cartridge Committee. Some users might rather buy products with public standards than isolate themselves to a proprietary format. But Irwin says its format is the de facto standard and will not lean toward Quic-40. The question remains whether the market will support Irwin's confidence.

IAN WARHAFTIG
and BRUCE POLSKY

20M-byte expansion-slot Winchester drive — the Hardcard 20, which sells for $895 — in June 1986. The success of both Hardcards is outstanding; more than 110,000 units were shipped in 1986.

Some say that imitation is the sincerest form of flattery. However, in the computer industry, imitation can mean reduced market share. Today, there are more than 30 vendors putting together products that duplicate the Hardcard idea.

And Plus's parent, Quantum, is in the throes of suing some of those vendors for patent infringement. With multiple strategies at play, capacity and price are the two battlegrounds.

Yet what separates the Plus product from its competition is not the $20 million that went into its development but its design, performance and marketing. The Plus Hardcard is the only true single-slot product. It is not made from standard OEM parts. And Plus spends millions of dollars annually on promotion.

The mini-cartridge drive

Most certainly, 1986 was the year of the 20M-byte Winchester. Can 1987 be the year of the tape drive? Certain indications make it look so as production gets under way for the 3M Corp. DC-1000- and DC-2000-compatible mini-cartridge drives. At least eight different tape OEMs are building this mechanism with the goal of a true 3½-in. form factor and 20M and 40M bytes of data storage capacity.

Led by Irwin Magnetic Systems, Inc., other current players include Alloy Computer Products, Inc., Archive Corp., Mountain, 3M and Wangtek, Inc.

The mini-cartridge drive offers several advantages from conventional PC tape drives. First, it is a product with a future. Personal computer OEMs are likely to endorse the 3½-in. Winchester and the 3½-in. floppy. This means that drive bays will be reduced to 3½ inches. Tape products that do not fit will have a decreasing role in the next generation of PCs.

The storage capacity of the mini-cartridge tape drive is ideal for the majority of personal computers — at 20M and 40M bytes, it is on target. Furthermore, higher capacity products tend to cost more. If users do not need additional megabytes, there is no need to pay for them.

While several tape OEMs are still in the ramp-up stage with the mini-cartridge drive, an atmosphere of healthy competition already exists. And just as OEM infighting reduced the cost of the Winchester, the same can be expected for the mini-cartridge drive.

Although the first products have been introduced with high price tags — for example, $995 for 40M bytes — the price is anticipated to erode by year's end to approximately $10 per megabyte for the 40M-byte products and $15 per megabyte for the 20M-byte products.

Why buy expensive mini-cartridge tape drives? While it is true that other tape drive products on the market are effective, they have their shortcomings — mainly cost, capacity and form factor, which refers to the physical size of the mechanism.

IBM's only PC tape drive, the 6157, is a 55M-byte, full-height, external ¼-in. cartridge device. With a connecting adapter, it retails for $2,225. This is considerably more expensive than IBM's own Winchesters, at $1,290 for a 20M-byte Personal Computer XT drive and $1,795 for the 30M-byte PC AT drive.

> CERTAIN indications make this look like the year of the tape drive — at least eight tape OEMs are building such mechanisms.

Subsystem vendors' ¼-in. cartridge products offer some improvements over IBM. These include 5¼-in. internal configurations as well as the reduction of the form factor to half-height. The average capacity is 60M bytes, and the costs run from $699 to $2,295, with the average around $1,000. A total of 60M bytes is perfect for several applications but more than enough for the 20M-byte Winchester.

Reel-to-reel option

Another tape drive option is reel-to-reel. If you have to transport mainframe or mini data to a PC, this is a great choice. It is readily available and can be used for backup as well. However, to purchase it solely for PC backup is overkill.

Perhaps the best available alternative to the mini-cartridge is the cassette drive, which is available in a 5¼-in., half-height form factor and offers 20M to 60M bytes of data storage. Priced between $399 and $1,395, their cost is much more reasonable than other tape products. However, when compared with the mini-cartridge, they falter on two major points: cassette design and cost.

The cassette was originally designed as a consumer audio device. It is made of injection-molded plastic and built to lower tolerances than the mini-cartridge.

The mini-cartridge also has a metal back plate. The cassette drive mechanism contains a capstan that positions the tape, which requires more mechanics, subjecting the device to greater potential mechanical problems.

These design variances drive up the costs for the cassette manufacturer. The mini-cartridge, thus, is more reliable and costs less to manufacture.

What will all of this mean to the tape drive industry? With the boom of the Winchester drive, there are more PC users than ever before in need of backup. However, the tape drive remains a secondary storage device; it plainly should not cost more than a Winchester.

What users need is a reasonably priced, reliable, 3½-in. tape drive. If the tape OEMs are able to deliver, 1987 could be a very good year for the mini-cartridge tape drive.

Warhaftig is a market analyst, storage products market program, at Framingham, Mass.-based research company International Data Corp. Polsky is the director of direct mail marketing at Patricia Seybold's Office Computing Group, Inc. in Boston.

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NEW PRODUCTS

Systems

Telesensory Systems, Inc. has announced the **Versabraille II+**, a portable braille computer.

The Versabraille II+ features a built-in 3½-in. disk drive, a built-in word processing program, a formatter, a calculator program and disk utilities.

Versabraille II+ costs $4,995. Available options include an external disk drive, a Duxbury translator and various applications packages.

Telesensory Systems, P.O. Box 7455, Mountain View, Calif. 94039.

Verticom, Inc. has announced its **Desktop 1280** monochrome graphics controller for the IBM Personal Computer family and compatibles.

The controller is said to offer a bit-block transfer rate of 26M pixel/sec., a character drawing rate of 10,000 char./sec. and a line drawing rate of 1.25M pixel/sec. It features a resolution of 1,280 by 960 pixels and can simultaneously display two pages of 8½- by 11-in. text on the screen.

Other features include pan and zoom, and support of a 64-Hz noninterlaced refresh rate.

The Desktop 1280 costs $1,295.

Verticom, 545 Weddell Drive, Sunnyvale, Calif. 94089.

Software applications packages

Russell D. Hoffman has announced **P11**, a graphics software program said to handle different types of animation.

P11 is said to handle up to 999 frames of both vector and raster graphics and includes a programming command language.

P11 is written in assembler. It costs $24.

Russell D. Hoffman, P.O. Box 5185, Bridgeport, Conn. 06610.

Quality Software Products has announced **Q-Calc · Standard**, a version of its Q-Calc software that adheres to the standard set by Lotus Development Corp.'s 1-2-3 Release 2.0.

Q-Calc Standard features the ability to filter spreadsheet data through arbitrary subprocesses written in any language, shell access and terminal independence via the termcap/terminfo data base. It also includes features of 1-2-3 Release 2.0 such as the macro language.

Q-Calc Standard runs on Unix-based systems. It costs from $450 to $4,000.

Quality Software Products, 348 S. Clark Drive, Beverly Hills, Calif. 90211.

Software languages

Unisoft Corp. has announced **optimizing Fortran 77, Pascal** and **C compilers** for use with the Apple Computer, Inc. Macintosh II running Apple's A/UX operating system.

The compilers are said to run under Unisoft's implementation of AT&T's Unix System V, Release 2 and Release 3 operating system for Motorola, Inc. 68000 and 68020 microprocessors.

They provide Institute of Electrical and Electronics Engineers, Inc. floating-point support, one-pass design, Uniplus+ or Motorola format assembly output and calling sequences, the vendor said.

The compilers are priced at $700.

Unisoft, 739 Allston Way, Berkeley, Calif. 94710.

Software utilities

Sterling Castle Software has announced the **Blackstar C Function Library** for the Microsoft Corp. Version 3.0 and 4.0 and Lattice, Inc. Version 3.0 C compilers.

The product features device handlers of screen, graphics, keyboard, printer and mouse as well as interrupt, string, menu, date, time and systems functions.

Sterling Castle Software, Suite 714, 702 Washington St., Marina del Rey, Calif. 90292.

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Software enhancements

Visual Communications Network, Inc. has released **Concorde Version 2.0**, an enhanced version of its graphics software for personal computers.

Concorde Version 2.0 is said to allow the user to create graphics, text and pictures and combine them into an on-screen slide show, complete with animation, special effects, user-interaction and music. Concorde supports output media such as hardcopy, foils, 35mm, video projection and print film.

Concorde costs $695.

Visual Communications Network, 238 Main St., Cambridge, Mass. 02142.

Printers/Plotters/Peripherals

Office Automation Systems, Inc. has reduced the price on its **Laserpro 810** and **Laserpro 1510** laser printers.

The Laserpro 810 is an eight page/min. printer, and the Laserpro 1510 offers 15 page/min. printing.

Both feature 300 by 300 dot/in. resolution, 768K bytes of random-access memory and printer emulations including Hewlett-Packard Co.'s Laserjet and Laserjet Plus.

The Laserpro 810 costs $4,595. The Laserpro 1510 costs $7,295.

Office Automation Systems, 8352 Clairemont Mesa Blvd., San Diego, Calif. 92111.

Board-level devices

Orchid Technology has announced a price reduction on its **Turbo EGA** graphics board.

The Turbo EGA is said to combine an accelerator and a graphics card. It offers IBM Enhanced Graphics Adapter, Color Graphics Adapter, Monochrome Display Adapter and Hercules compatibility. It also features 256K bytes of graphics memory. The Turbo EGA now costs $749.

Orchid Technology, 45365 Northport Loop W., Fremont, Calif. 94538.

Auxiliary equipment

Microsync, Inc. has introduced **Dclock II**, a slotless clock/calendar for personal computers.

Dclock II is said to enter the correct date and time whenever a user turns on the PC. The clock/calendar plugs into the back of the system's floppy disk drive, between the drive and the cable that goes to the controller card.

Dclock II is priced at $69.95.

Microsync, P.O. Box 116302, Carrollton, Texas 75011.

Microspeed, Inc. has announced **Fasttrap**, a three-dimensional pointing device said to allow users to directly input X-Y-Z axis data into applications programs.

Fasttrap uses a trackball for two-axis motion control and a finger wheel to control the third axis. It emulates current mouses on hardware to allow compatibility with existing software and contains three input buttons.

Fasttrap is compatible with the IBM Personal Computer and compatibles. It costs $149.

Microspeed, 5307 Randall Place, Fremont, Calif. 94538.

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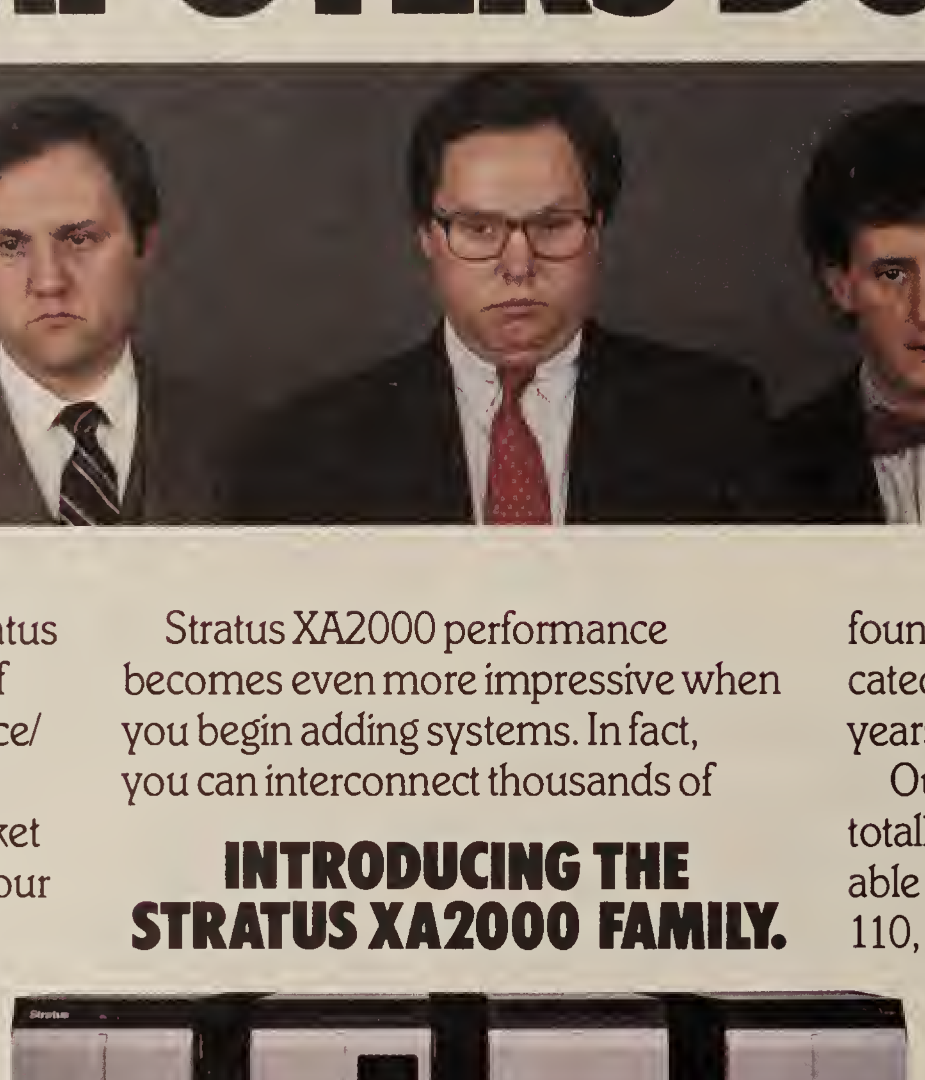

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Walter Ulrich

An early slip chaser

All communication systems — from local-area networks to dial-up modems to human conversation — need a way to detect and correct errors. And every error detection and correction technique includes some overhead consisting of verifying data. If I give you a telephone number verbally, you will repeat it back to me to be sure it is correct. The military alphabet ties two-syllable words to each letter; the added redundancy ensures that alphabetic sequences will be understood in noisy conditions.

Error detection comes before error correcton. In human speech, we instinctively know when communication is ambiguous or unclear. Data communication systems have no such intuition; thus, techniques must be implemented to ensure error detection. Parity checking adds one bit per byte and can identify if one bit is in error, but it fails if an even number of bits is in error within the byte. Overhead in this case is 12% of the data stream.

Continued on page 50

Product wave hits Interface '87

Graphics package, multiplexers and modems highlight array of intros

BY DONNA RAIMONDI
CW STAFF

LAS VEGAS — Dozens of products were announced last week at Interface '87 here. Among them were the following:

- May-Craft Information Systems, Inc., a technical marketing company, released Teknigraphics Graph-Tek 4010 and 4105 graphics software. These packages provide an interface to many IBM mainframe graphics packages when installed on one of that firm's Personal Computers with an IBM 3278 coaxial emulator.

When graphics commands are transmitted from the IBM mainframe to the PC, they are detected and immediately displayed or plotted, May-Craft said. The 4010, which provides Tektronix, Inc. 4010 and 4014 graphics, costs $395. The 4105, which provides Tektronix 4105 color graphics, costs $595.

- Datagram Corp. introduced Datagram Network Control (DNC) — a combination of software, an IBM PC or compatible and connectors to Datagram multiplexers, data compressors and controllers in a network.

The DNC allows central control — monitoring, alarm reporting, troubleshooting, statistics gathering and reconfiguration — of all Datagram equipment.

A typical configuration, controlling 10 circuits, costs from $20,000 to $25,000.

- Gandalf Data, Inc. unveiled its MUX 2000 multiplexer, which provides an applications-determined mix of asynchronous and synchronous statistical multiplexing, X.25 multiplexed access and synchronous time-division multiplexing for use with high-speed digital services and digitized voice transmission for private branch exchange-to-private branch exchange trunking.

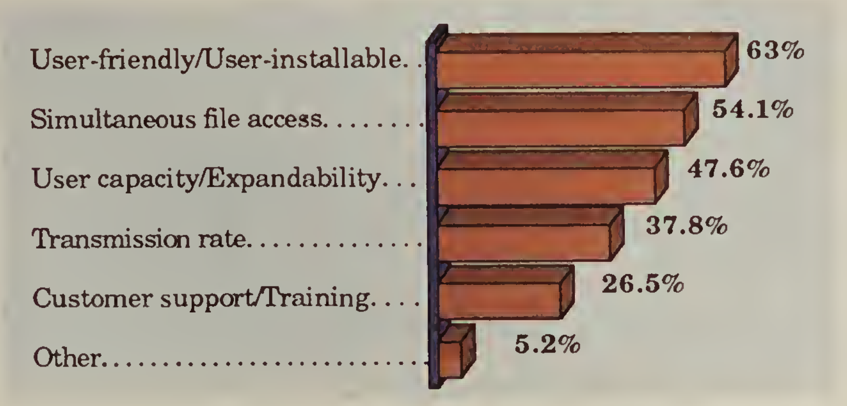
Elements of the MUX 2000 include the XMUX X.25 packet assembler/disassembler, which costs from $2,195 for a four-channel version to $4,695 for a 16-channel version; the KMUX seven-channel synchronous time-division multiplexer, priced at $2,595; the VMUX two-chan-

Continued on page 48

Ease of use tops LAN shopping list

User friendliness and LAN priorities

MIS managers responding to a Computerworld survey put friendliness first, file sharing second when buying LANs



INFORMATION PROVIDED BY CW COMMUNICATIONS, INC. RESEARCH DEPARTMENT
CW CHART: SUSAN ALDAM

BY ELISABETH HORWITT
CW STAFF

User friendliness and installability proved to be important local-area network (LAN) shopping criteria for 63% of the 705 MIS managers surveyed by *Computerworld* in late 1986.

The next most important consideration was whether a LAN provided users with simultaneous file access — given high priority by 54.1% of the MIS/DP managers surveyed. Expandability and transmission rate were also important priorities (see

Continued on page 50

Firm takes a hard look at net system

BY DONNA RAIMONDI
CW STAFF

LEXINGTON, Mass. — Standard & Poor's Corp., as a beta-test user of Codex Corp.'s 9300 color graphics-based network management system, is evaluating how much of a difference the system's purported user friendliness makes to users.

The system has already made network management easier at Standard & Poor's Financial & Economic Information Co., according to Michael Rauch, director of network planning.

While all the benefits of the color graphics workstation system are still difficult to measure exactly, Rauch says the system is making his staff's time more productive, allowing employees to do analysis rather than gather data.

"Long range, we hope it will improve the quality of the network by making us more accurate and responsive at finding errors before they impact the network," he says.

"Our network has a digital backbone and four major net-

Continued on page 49

Inside

- Nestar adds PCs as part of LAN family. Page 48.
- Zenith claims card allows micros to talk at 0.5M bit/sec. on net. Page 51.

MAINFRAME

printf("Hello, world\n");

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Firm answers calls for total system

MOUNTAIN VIEW, Calif. — Nestar Systems, Inc. has introduced three personal computer workstations as part of its Plan series local-area network (LAN) family.

The workstations were developed in response to customer demand for a total system, Nestar said. "Multivendor [system] buys are losing their appeal with many organizations. Many customers want a single accountable vendor and want to know at the time of installation that the system works," said Robert Oakley, director of marketing.

All models include 640K bytes of memory, color or monochrome graphics adapter board, keyboard and Nestar's network adapter cards. The units, which are 12 in. wide, feature a small footprint. The IBM-compatible models provide a choice of three CPUs: Intel Corp.'s 8088 4.77 MHz, 8088-II 8 MHz and 80286 6 MHz/8 MHz models.

Arcnet or IBM Token-Ring configurations are available, as are optional floppy drives for the 8088, with a 360K-byte floppy disk and controller, and for the 286, with either 1.2M-byte or 360K-byte floppy drives.

Prices begin at $895 for a diskless 8088 workstation, including an Arcnet interface. A diskless 286 with Arcnet costs $1,695.

The 286 Token-Ring version requires one floppy drive and a controller since the Token-Ring does not have the capability to boot from the network. This configuration costs $2,695. The addition of a monochrome monitor is $100.

Product wave

FROM PAGE 45

nel voice and data time-division multiplexer, which costs $950; and the SMUX switching multiplexer, priced from $2,050 for a four-channel version to $3,850 for a 16-channel version.

Gandalf also released its Digital Equipment Corp. VAX Gateway Server 2518, which will reportedly enable Gandalf's Private Automatic Computer Exchange 200 or 2000 network nodes to directly connect to DEC Unibus-equipped computers. The system includes the server, which is installed in the computer system, and the Gandalf Line Miser module, which is installed in the switch, and costs $2,945.

- Data Race, Inc. announced three high-speed modems: the Race-VM, the Rally 9600-Fast Poll and the Rally 208 A/B. Race-VM adds alternate CCITT V.22 2,400 bit/sec. capability to the existing Race 9600 modem. It comes in several models of two varieties of Race-VM and BMX-VM that range in speed from 300 to 19.2K bit/sec. and cost from $1,495 to $1,745.

The Rally 9600-Fast Poll costs $1,395 and is a synchronous full-duplex modem for point-to-point or multipoint operation over four-wire leased lines. Another version, the Rally 9600-Fast Poll DBU, costs $1,795 and adds dual-dial backup for automatic service restoration if the four-wire leased line should fail.

The $1,195 Rally 208 A/B is a synchronous full-duplex modem that operates in either AT&T 208 (4.8K bit/sec.) or V.27 (4.8K bit/sec.) mode.

- Tri-Data introduced its Netway 1500 Multiple-Host Network System. The product supports up to 18,000 users on 10 different host-computer protocols, Tri-Data said.

System components include the Netway 1500 nodal processor, the 1004 device interface processor, the 1044 device-interface processor, a rack-mount interface processor and the Hub 250 and Hub 100, which allow nine and three cable runs, respectively, to be developed from a single cable.

The system costs from $850 to $1,200 per user, depending on the number of host protocols addressed and the number of terminal users supported.

Unleashing a powerful new species of Firebreather.

Hard look

FROM PAGE 45

WITH the 9300, Codex is in the process of refining a management system that will manipulate historical data and provide management reports.

work nodes that are linked with dual 56K bit/sec. links, and off those nodes, we run analog circuits," Rauch explains. "We have circuits overseas, also, and we have gateways to public data networks around the world."

A network administrator, two network analysis and design engineers and six network operators plan, run and maintain the system, Rauch says, in what he calls an aggressive, offensive network management style.

The performance, traffic and component monitoring needed to keep the network in top shape are carried out in a variety of places, Rauch says.

The shop uses Codex equipment on its 50 analog lines and Infotron Systems Corp. multiplexers and a large Infotron switch in Lexington to do port contention.

Each of those components has its own network monitoring capabilities. In addition, Rauch has had to develop specific, personal computer-based monitoring tools "to fill in the gap of some of these vendors," he says.

For example, a PC programmed by the staff can dial up all of the ports in a particular city, run tests on each port and return with a report on how that city's network components are doing, Rauch explains. "Before we put in Codex 2600 series modems a year ago, we had AT&T modems. All their network control system did was tell us something was wrong, not what was wrong. So we developed some tools that monitored the output and did some management reporting and automatic trouble reporting."

With the Codex modems, Standard & Poor's installed a Codex Distributed Network Control System (DNCS) that allows reconfiguration and testing of the modems. The 9300, based on Hewlett-Packard Co.'s Vectra personal computer, is a replacement for the DNCS, according to Joe Ingram, an engineer who is managing the beta test.

Ingram says his employees are finding the 9300 far easier to use than the DNCS, which is a cumbersome, triple-floppy disk drive system, he reports. The 9300 consists of the HP Vectra with color graphics, a mouse for control, Microsoft Corp. Windows software, a data base and applications software.

Information abounds

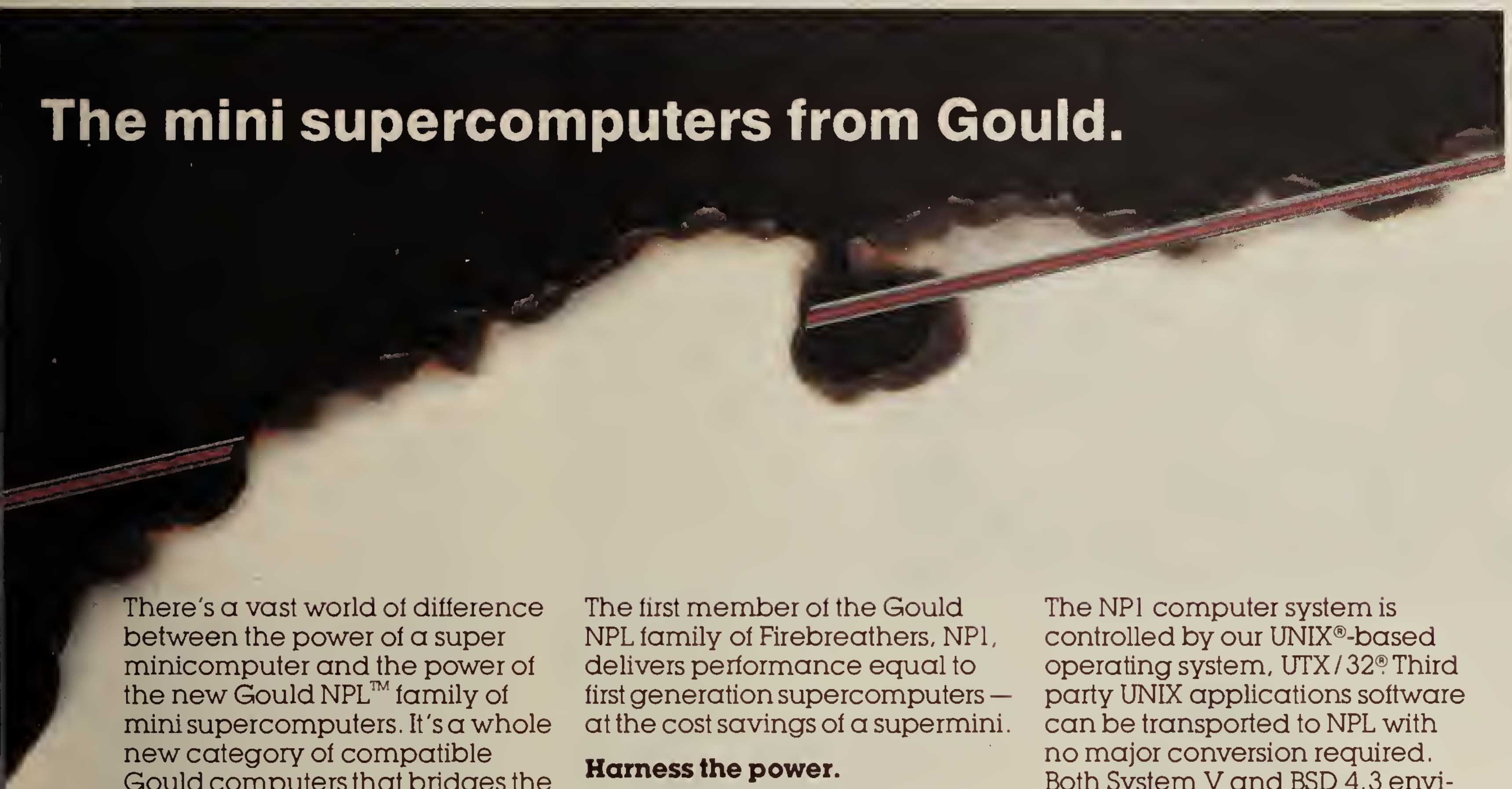
The screen portrays data in bar-chart form with user-changeable hues, Ingram explains. "There are about eight to 10 different parameters of the line being monitored, and right now, it gives us more information than we need," he says.

If the user is testing the analog values on a telephone circuit, the test will update itself as each measurement registers. After the test is complete, the user can examine the test results and look at whatever aspects of the data he wants to see.

The 9300 keeps all the data in a history file. Codex is in the process of refining a management system that will manipulate the historical data and provide management reports. Standard & Poor's found the initial Codex's management reporting system cumbersome, Rauch reports.

The 9300 "is a tool, not an expert system," Rauch emphasizes. "If Codex could develop a product that would analyze what was wrong, their computer could talk to a robot and fix the line, and we could all go home." In the meantime, the 9300 will give Rauch time to look within the network to improve service, he says.

The mini supercomputers from Gould.



There's a vast world of difference between the power of a super minicomputer and the power of the new Gould NPL™ family of mini supercomputers. It's a whole new category of compatible Gould computers that bridges the gap between giant supercomputers on the one hand and superminis on the other. The Gould NPL family offers you the power and advantages of supercomputers at the cost of superminis.

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Supercomputers are characterized primarily by their parallel architecture and high speed vector processing capabilities.

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The first member of the Gould NPL family of Firebreathers, NP1, delivers performance equal to first generation supercomputers — at the cost savings of a supermini.

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No longer are you limited by computer technologies that haven't kept pace with your imagination.

The multiprocessor parallel architecture of the Gould NP1 gives you the availability of both high performance scalar and vector processing, simultaneously. Real memory is expandable to a mammoth 4 billion bytes.

Moreover, unlike supercomputers (and most minisupers), Gould NP1 is designed to support the concept of open system architectures — especially with regard to languages, operating systems, I/O interfaces and communications.

The dual processor NP1 system buses can be expanded to include up to eight CPU's, configured over four buses interconnected by high speed intersystem bus links. The system bus design delivers continuous throughput at a rate five times faster than any supermini on the market.

The NP1 computer system is controlled by our UNIX®-based operating system, UTX/32® Third party UNIX applications software can be transported to NPL with no major conversion required. Both System V and BSD 4.3 environments can be selected. The repertoire of industry standard languages includes vectorizing FORTRAN, highly optimized C compilers, and Ada® in addition to BASIC, Pascal, COBOL and LISP.

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GOULD
Electronics

Slip chaser

CONTINUED FROM PAGE 45

Cyclic redundancy checking is commonly used to detect errors. Overhead in this case is two 8-bit bytes per data block of usually 80 to 512 characters, or 0.3% to 2.5% of the data stream.

Once errors are detected, they must be corrected. The simplest of systems require the receiving device to return either a positive or negative acknowledgment. In the event of a negative acknowledgment, the sender would retransmit the message. The next level of sophistication allows the recipient to identify that block of the data with errors and the sender only retransmits that block of data. Both correction techniques add overhead.

Another method, forward-error correction (FEC), further increases the initial overhead of the transmission but enables errors to be detected and corrected at the receiving end. No retransmission is necessary. The Consultative Committee on International Telephone and Telegraph (CCITT) incorporated a forward error correction technique called Trellis-coding into its V.32 specification for 9.6K bit/sec. dial-up modems. At least three firms currently manufacture V.32 modems: Concord Data Systems, Inc., Codex Corp. and Universal Data Systems, Inc.

Forward error correction is absolutely essential in certain circumstances. In some mediums, like simplex communication links, there is no return communication channel to provide a negative acknowledgment or to request a retransmission. FM subcarrier transmission is one example of how a message may be sent to thousands of receivers that have no capability of sending a return message.

Where a return channel is available, the use of FEC vs. traditional techniques is an issue of bandwidth economics. Part of the issue rests on the trade-offs between the overhead of retransmission vs. the initial overhead of the encoding scheme.

If error rates are high, causing multiple retransmissions, forward error correction will be superior. If error rates are low, more traditional, retransmit choices will suffice.

The proper transmission scheme maximizes the efficiency of the bandwidth and optimizes the total communication cost. It may well be that FEC improves the actual throughput of lower quality, less expensive lines so that they compete with higher quality lines that use traditional error correction techniques. The issue then boils down to the additional cost of FEC. How does it compare with the additional cost of higher quality lines?

Using satellite gear

Satellite transmission is one of the areas where the FEC argument makes sense. A round trip from earth segment to space to earth segment and back again includes a tangible delay. Error rates can fluctuate based on everything from the condition of equipment to sun spots to the weather, depending upon the transmission frequencies. The additional cost of FEC pales in comparison with satellite gear.

FEC use in broader markets such as modem-based communications is limited today because of the costs associated with coding FEC algorithms. As time goes on, however, board-level FEC modules will give way to chip-level devices. Today, FEC modules add at least $500 to the cost of the communication device. Chip implementations of FEC are just coming to market.

One such implementation comes from Space Research Technology (SRT) in Houston. According to Ben Midulla, president of SRT, his company is developing chip-level FEC components for less than $100. These chips will make it cost-effective to build FEC into modems, X.25 pads and channel and digital service units. As prices go down and bandwidth needs go up, forward error correction will become increasingly important for a wide range of communication services.

Ulrich is president of Walter Ulrich Consulting, a subsidiary of Coopers & Lybrand.

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The way to solve the network management puzzle is with software components that are made to fit together.

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Ease of use

CONTINUED FROM PAGE 45

chart page 45).

Modems were easily the most widely installed communications equipment among those surveyed, with 91.5% of respondents' firms currently using them and 65% planning installations within the next 12 months.

The survey found LAN installations are expected to increase. While only 42% of those surveyed currently use LAN hardware, 55.9% said that they have plans to purchase such products within the next 12 months.

Almost 66% of the respondents said they now use micro-to-mainframe links; 60.4% said they plan to purchase them.

By far the most popular form of micro-to-mainframe link was IBM 3270 terminal emulation, which is in use at 76% of the respondents' companies. In addition, more than 63% of the respondents indicated they are planning 3270 terminal emulation purchases within the next 24 months.

In contrast, IBM's peer-to-peer Systems Network Architecture-based LU6.2 protocol is currently being used by only 7.1% of respondents, with 17.1% planning to purchase LU6.2-based products.

NEW PRODUCTS

Local-area network hardware

Zenith Electronics Corp. has announced the **Z-LAN 500C Lancard**, a device said to allow personal computers to communicate at 0.5M bit/sec. in Zenith's Z-LAN broadband local-area network system.

The Lancard is an intelligent bus-adapter card designed for installation in a PC expansion slot. The IBM Netbios-standard network interface is on the card. It can perform layer- and system-level network management functions.

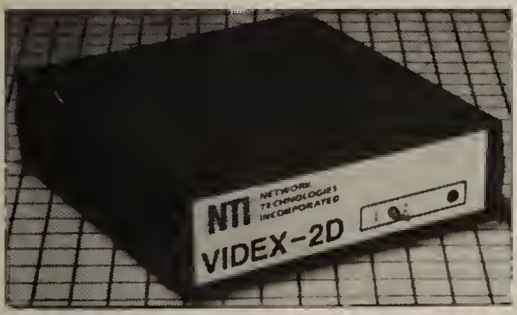
The Z-LAN 500C Lancard is priced from $495 to $695, including external RF modem.

Zenith Electronics, 699 Wheeling Road, Mount Prospect, Ill. 60056.

Network Technologies, Inc. has announced **Videx-2D**, a video port expander.

The unit is said to increase the number of attached monitors to two and extend the distance between a personal computer and its monitors up to 50 ft. The two monitors may be either local or remote.

Videx-2D operates with monochrome and color monitors including those implementing the IBM Enhanced Graphics Adapter. It is also available with an optional connector that supplies vertical synchronous output with switchable polarity.



Network Technologies' *Videx-2D*

The Videx-2D costs $229.95.

Network Technologies, 19145 Elizabeth St., Aurora, Ohio 44202.

American Photonics, Inc. has announced a **T-carrier fiber-optic transmission system** for the local loop that provides up to four T1 lines with additional voice and control channels on a single-fiber pair.

The modular transmission system is said to provide T-carrier data transmission between voice-channel banks, digital private branch exchanges, data multiplexers and other T1-compatible equipment.

The system consists of an optical modem operating with a single mode or multimode fiber; a multiplexer combining up to four independently timed T1 channels; a voice channel with alert and a network control line; and a hot-standby protection switch that senses signal degradation from either the modem or multiplexer and provides an alternate channel.

Prices start at $2,500.

American Photonics, 71 Commerce Drive, Brookfield Center, Conn. 06805.

Customer premise equipment

Franklin Telecommunications Corp. has announced a family of **X.25 packet-switched network products** based on the IBM Personal Computer AT.

The products are a Network Control Center, Switch and Systems Network Architecture Packet Assembler/Disassembler. Each product node is said to implement ICP-188 multiple-protocol line cards. Each line card is said to have four ports with speeds of up to 64K bit/sec. per line.

A PC AT is said to be able to support up to six ICP-188 line cards or 24 ports.

Prices start at $2,500 for a four-port subsystem including one ICP-188, X.25 node-specific software and documentation.

Franklin Telecommunications, 733 Lakefield Road, Westlake Village, Calif. 91361.

Telelogic, Inc. has announced **Universal Network Interface Systems**, designed to allow a company to connect its multiple sites through its own virtual private network.

According to the vendor, the software control features of the virtual private network are distributed down to the customer's premise. The Customer Premise Module, a software-based network adjunct, is installed in conjunction with a private branch exchange or a Centrex system. It acts as the master control point for all outgoing and incoming calls. Each four-line, 12-port customer premise module features a 1,200 bit/sec. modem.

The Network Interface Management System, installed in a network control room, provides customer control.

A complete system is priced from $15,000.

Telelogic, 121 Innerbelt Road, Somerville, Mass. 02143.

Links

Western Digital Corp. has introduced **Ethercard Plus**, a personal computer plug-in board that provides a network station interface to Ethernet and thin Ethernet local-area networks.

The board has an 8K-byte buffer memory that it shares with the personal computer. It operates in IBM Personal Com-

Continued on page 52

Plug Any ASCII Async Printer Into IBM 3274

Local Data's *newest* InterLynx®/3287 gives you immediate host access and 3287/3289 emulation.

Now you can use virtually any asynchronous printer anyplace you can plug in an IBM 3287...

Connect an HP Laser Jet, Xerox 2700, NEC Spinwriter, Epson FX-80, Okidata/ML92, or an IBM Proprinter to your mainframe host.

The choice is yours from hundreds of brands and models with baud rates to 19.2K bps and parallel print rates to 26 pages-per-minute!

This *newest* InterLynx/3287 is easy to install. Configure it from virtually any async terminal connected to the serial port or use the convenient front panel.

(Options are stored in non-volatile EEPROM.)

What's New?

- Printer setup strings are now user definable, making it easier to work with laser printers.
- Pseudo-transparency triggering is now user definable and allows taking direct control of the ASCII printer generating computer graphics, alternate character sets and other device unique outputs.
- Print rates are now up to 26 pages-per-minute.
- Translation tables are now easily user modified.
- Xerox's SNA SCS code 36 is now supported.

But Some Things Don't Change.

InterLynx/3287 is still an easy to use printer interface connecting inexpensive ASCII async printers to IBM 3274. It's easily connected to the host and for pennies a day gives steady, reliable service.

More than 7,000 InterLynx/3287s are in use worldwide. They're backed by a 12 month warranty and an experienced tech support team.

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Continued from page 51

puters, PC XTs, ATs and compatibles with system clock speeds of up to 16 MHz. It supports external transceiver connections to standard Ethernet cabling.

Ethercard Plus costs $399.

Western Digital, 2445 McCabe Way, Irvine, Calif. 92714.

Network Software Associates, Inc. has unveiled **Remote/Talk**, a personal computer-to-personal computer synchronous communications software package.

The package is said to offer both remote-control and concurrent background file transfer capabilities. It communicates via IBM's Synchronous Data Link Control protocol. It permits two PCs to link together, with the local PC transformed into an extension keyboard and screen of the remote PC. Files can be transmitted from one PC to another in background mode as well as in foreground mode.

Remote/Talk operates at up to 19.2K bit/sec. on any IBM PC or compatible. It costs $295.

Network Software, 22982 Mill Creek, Laguna Hills, Calif. 92653.

Protocol converters

Digital Link Corp. has announced the **DL55IV** V.35/RS-449 T1 converter and Channel Service Unit (CSU).

The product is said to permit direct connectivity of computers, local-area networks, satellite earth stations and high-speed computer-aided design and manufacturing workstations to 1.544M bit/sec. T1 networks. The DL55IV provides D4 framing and one density required for transmission on public or private T1 networks and includes an integrated CSU.

Features include CSU self-test, data terminal equipment loop-back and in-band network loop-back code detection and generation. Fault isolation diagnostics can also be implemented.

The unit is priced at $3,995.

Digital Link, 133 Caspian Court, Sunnyvale, Calif. 94089.

Modems/Multiplexers

Concord Data Systems, Inc. has announced the **CDS 212/V.22 Autodial** modem.

The modem is said to provide full-duplex operation at 1,200 and 300 bit/sec. in both synchronous and asynchronous modes. It features IBM Personal Computer AT autodialing command sets and is compatible with AT&T 212 and 103 and CCITT V.21, V.22 and V.23 standards.

The modem costs $350.

Concord Data Systems, 397 Williams St., Marlboro, Mass. 01752.

Aydin Monitor Systems has introduced the **Independently Controlled Dual Channel Echo Canceller,** an enhancement to its T1 multiplexer line.

The built-in Dual Channel Echo Canceller, based on Digital Signal Processing technology, enables the multiplexers to provide individual channel echo cancelling, eliminating the need for separate external equipment, cabling or power.

Prices start at $300 per channel end.

Aydin Monitor Systems, 700 Dresher Road, Horsham, Pa. 19044.

Diagnostic equipment

L-Com Data Products has introduced the **Model DX-50** pocket-size checker for modular cables.

The device is said to evaluate the integrity of any two-, three- or six-wire RJ-11 modular cables.

It features three two-color LEDs, which determine whether the cable is properly wired for data use with straight-through pinning or for voice communications with crossed pinning.

L-Com Data's *Model DX-50*

Including battery, the Model DX-50 costs $26.95.

L-Com, 1755 Osgood St., North Andover, Mass. 01845.

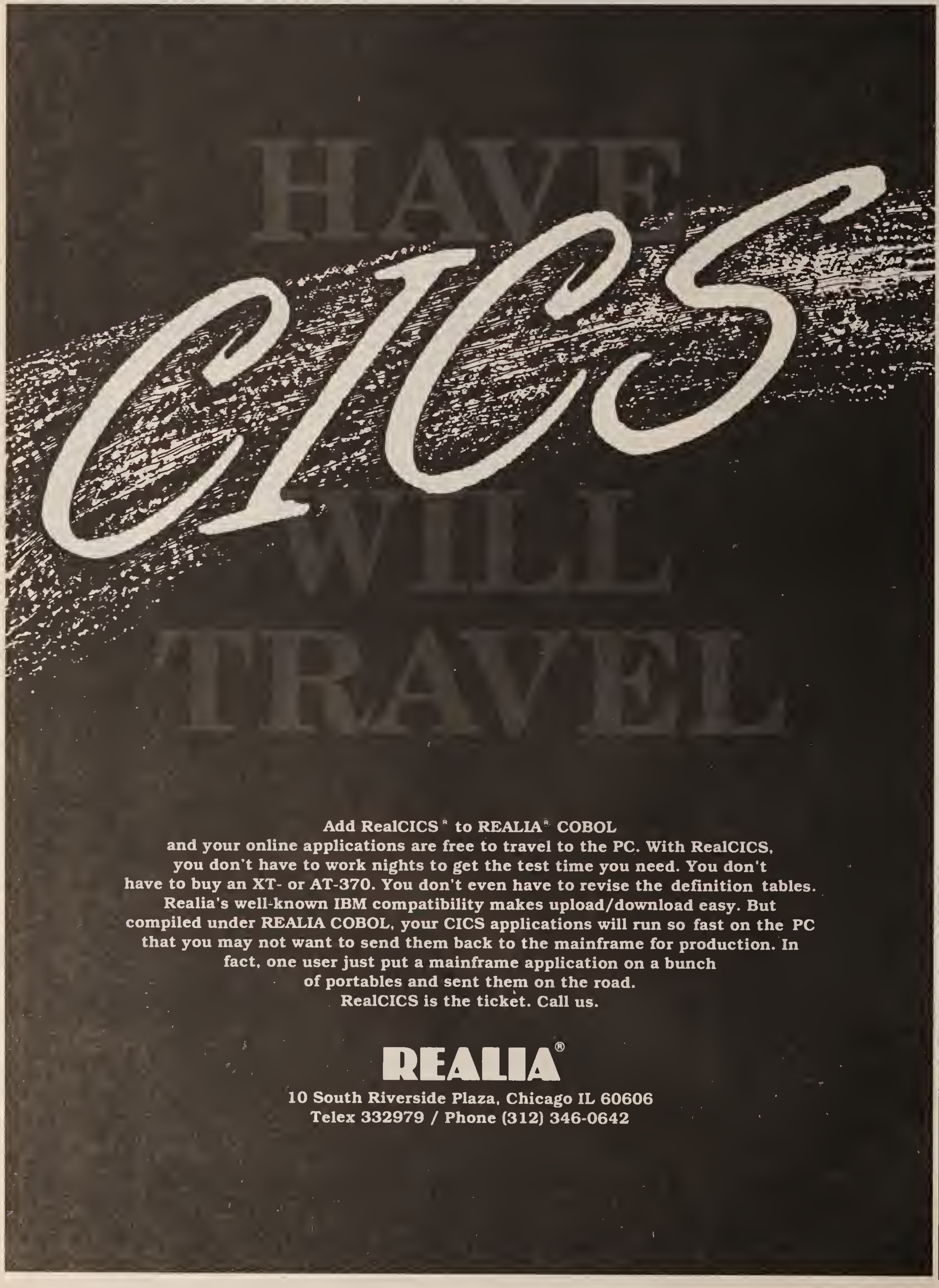
Network General Corp. has announced a dual local-area network (LAN) version of **The Sniffer**, the company's data collecting, recording and analysis unit.

The Sniffer was originally designed for the IBM Token-Ring network. It can be set to trigger on specified events. It allows users to filter, capture and record transmission frames or frame subsets at full network speed without affecting network performance.

The Sniffer incorporates decoders for protocols such as the XNS protocols used by Xerox Corp., 3Com Corp and Ungermann-Bass, Inc., as well as TCP/IP, Network File Server, Server Message Block and the IEEE 802.2 LLC Type 1 and 2 implementations.

The Ethernet Sniffer costs $19,000. The dual LAN version costs $24,000.

Network General, 1296B Lawrence Station Road, Sunnyvale, Calif. 94089.



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SYSTEMS & PERIPHERALS

HARD TALK

James Connolly

Stuck in the middle

People can complain, if they want to pick an argument with IBM, that the IBM mid-range strategy lacks direction or that the product line still lacks compatibility. But at least the IBM mid-range isn't boring.

IBM recently made the long-awaited move to improve shipment dates for the latest star of the mid-range, the 9370, the departmental system that IBM claims to have installed at more than 100 test sites and for which it claims to have "tens of thousands of orders."

But some of those who were excited to see the schedule advanced were subsequently disappointed to learn that their particular orders are still months away from being filled. Even some value-added resellers (VAR) — people who have to develop software for the 9370 before they can move the system through VAR channels — report that IBM has been tightfisted with development and demonstration versions of the processor.

IBM has worked particularly hard during the past two years to clarify its mid-range strategy, which amounts to moving the System/36 and 38 closer together from technical and marketing standpoints and offering the 9370 for users who want a growth path into the IBM 370 mainframe architecture. The company says it continues to offer myriad other mid-range systems, such as the Series/1 and System/88, for special purposes.

That's a commendable effort by the company, which wound up with a broad range of incompatible systems for an equally broad range of reasons. And the move to drive the System/36 and 38 closer together apparently will pick up speed during the rest of this year.

One System/38 observer reports that announcement of the processor code-named Silverlake — which is meant to support the operating systems of both the System/36 and 38 in a

Continued on page 61

Firm doubles relational power

BY JAMES CONNOLLY
CW STAFF

IRVINE, Calif. — McDonnell Douglas Computer Systems Co. has doubled the peak performance of its relational data base-oriented business computers with the introduction of two systems designated the Series 18.

The 18/955 and high-end 18/965 reportedly feature new hardware designs that speed CPU performance and system throughput even with the maximum number of terminal users active concurrently. The 18/965 was designed to support up to 400 local and remote concurrent terminal users.

"The Series 18 is at least twice as powerful as anything we've developed so far. With this announcement, we have also significantly out-distanced the performance levels of other relational data base solutions," said Otis Brinkley, president of McDonnell Douglas.

The processors run the company's Reality operating system, which is largely resident in microcode and is a dictionary-driven, relational data base management system.

Aimed at general business

Like earlier McDonnell Douglas systems, the Series 18 is aimed at general business applications with an emphasis on transaction processing. The Series 18 also supports McDonnell Douglas's All fourth-generation program development language.

The 18/955 supports 4M to 12M bytes of random-access memory and up to 10 500M-byte disk drives for a total of 5G bytes of on-line storage. The system supports up to 300 concurrent users and has a base price of $395,000.

The 18/965 is available with 8M to 16M bytes of memory and up to 5G bytes of disk storage.

The systems will be available on a limited basis in May with volume shipments expected in September, the vendor said.

In addition to the Series 18 systems, McDonnell Douglas offers the older Series 6000 and Series 9200 Reality-based systems. The company claims an installed base of 14,000 systems.

Data View

Mainframe links

IBM System/36 and Hewlett-Packard Co. HP 3000 lead other minis in mainframe ties.

System	*Percent**
IBM System/36	53.2
IBM System/38	6.3
IBM 4300	12.7
Digital Equipment Corp. VAX	1.1
HP 3000	58.9
Wang Laboratories, Inc. VS	13.3

*Based on a sample of 41,434 systems.

INFORMATION PROVIDED BY COMPUTER INTELLIGENCE AND SANFORD C. BERNSTEIN & CO.

Floating Point, DEC to co-market systems

MARLBORO, Mass. — Digital Equipment Corp. and Floating Point Systems, Inc. recently signed an agreement to sell FPS M64/60 and M64/30 processors with DEC VAX computers.

The agreement allows DEC customers to order both the VAX hardware and Floating Point processor from DEC in a single transaction. The FPS M64/60 processor, which can execute at 38 million floating-point operations per second (MFLOPS), combines with DEC's VAX 8550, 8700 and 8800 computers. The FPS M64/30, a 12-MFLOPS processor, is packaged with the VAX 8200 system.

DEC said the bundled systems perform large analysis batch jobs and small analysis jobs 20 times faster than the VAX system alone.

The hardware is targeted at engineering, scientific and technical users in the aerospace, automotive, petroleum and transportation industries.

The Floating Point processors are mini supercomputers that incorporate vector process-

Continued on page 61

Terminal makes own windows

BY ALAN ALPER
CW STAFF

MELVILLE, N.Y. — Esprit Systems, Inc. has unveiled its second-generation Digital Equipment Corp. VT220-compatible, featuring a personal computer-like windows utility.

Esprit's Opus 220 has a windows utility that enables users to store often-used menus and Help screens in auxiliary memory without having to download them from the host. Ongoing applications are suspended while the data is displayed in pop-up window form. The original screen data can be retrieved when the application is resumed.

"This feature allows systems integrators and OEMs to differentiate their products through software," noted Salvadore Lanuto, Esprit's director of marketing.

The list price of the Opus 220 is $559. It is available through

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Inside

- Fujitsu adds high-end Pick-based system. Page 59.
- Motorola aims series of processors at OEM technical computer market. Page 59.
- Force Computers introduces desktop-size VMEbus-based system. Page 62.

Pick system eases Honeywell-IBM conversion

BY STANLEY GIBSON
CW STAFF

COLUMBUS, Ohio — An Ohio user credits the Pick-based Ultimate operating system for a relatively smooth conversion from a Honeywell, Inc. DPS 6 to an IBM 4381 system.

Central Benefits Mutual Insurance Co., a Blue Cross of Central Ohio plan, recently moved its health maintenance organization software package from one system to the other. The Ultimate operating system is an enhanced version of the Pick operating system offered by The Ultimate Corp.

The Honeywell system was running out of power. Rather than going to a larger Honeywell system, Central Benefits chose to install an IBM 4381 because it could share peripherals — including disks, tape drives and printers — with the IBM 3081 mainframe already in place.

In addition, the 4381 could communicate more readily with the mainframe than the Honeywell processor.

"The main thing is we connected these machines," says M. James Kramer, director of subsidiary systems for Central Benefits. "You can look at either machine from a terminal."

Interface too cumbersome

Kramer says he investigated using a channel-to-channel interface but found it too costly and cumbersome. Instead, he opted to use VTAM and a 3725 communications processor. Central Benefits' 4381 runs the VM operating system, while the 3081 runs MVS/XA.

Kramer says the whole project took eight months, including four months of planning during which both Ultimate and IBM participated. In all, 4,000 programs were converted. Kramer continues to use a number of ASCII devices with the assistance of an IBM 7171 protocol converter.

"We don't have to worry about disk space any more. Even though we already have 30,000 members and 15,000 fee-for-service patients, our system can handle five times that number," Kramer says.

"And should we outgrow our system again, we'll just take our software off our present IBM machine and place it on a more powerful one," he continues.

Currently, the 4381 handles 118 terminals and 10 printers, while the 3081 handles nearly 700 terminals.

The software package used by Central Benefits is put out by CSC Comtec, Inc., an Ultimate dealer in Farmington Hills, Mich.

The package automates the day-to-day functions of a health maintenance service, including enrollment, group billing, claims processing, utilization, financials, appointment scheduling and health maintenance organization pharmacy.

The package also offers a medical history data base that can be easily accessed and manipulated.

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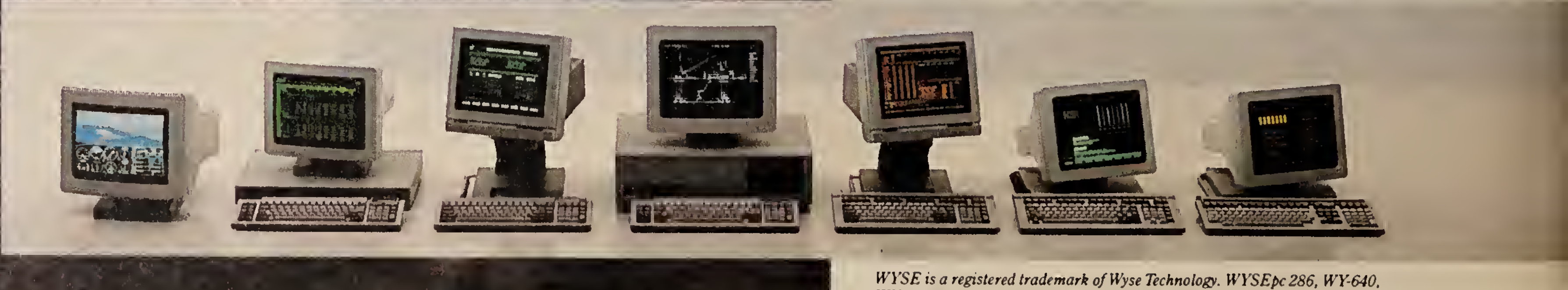

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Fujitsu bases 32-bit system on Pick, Intel

SAN JOSE, Calif. — Fujitsu Microsystems of America, Inc. recently introduced a high-end member of its Series 2000 family of business computers based on Pick Systems' Pick operating system.

The System 2200 Model 50 is a 32-bit system featuring increased disk storage and main memory in comparison with earlier models.

The system is based on a 16-MHz Intel Corp. 80386 microprocessor and 1M-bit Fujitsu memory chips.

A minimum configuration includes 171M bytes of disk storage, 2M bytes of memory, a 60M-byte cartridge tape drive, a parallel printer port and eight RS-232C ports. Memory can be expanded to 4M bytes and disk storage can be increased to 513M bytes.

The company said the System 2200 Model 50 can be used in Fujitsu's Common Network Architecture (CNA), which supports up to 64 Series 2000 processors and 2,048 users. CNA also allows systems networked under Pick to communicate with IBM Personal Computers, Fujitsu said.

The system supports eight to 32 users and is scheduled to be shipped in June. Prices vary according to system configurations and range from $19,750 to $45,000.

Motorola enters technical market

TEMPE, Ariz. — Motorola, Inc.'s microcomputer division, which in the past has sold board-level products in the OEM market, has announced a series of system-level processors for the OEM technical computer market.

The VME Delta series will include work group computers serving up to 10 users, and small and large departmental computers serving up to 34 and 96 users, respectively.

The products are based on Motorola's 68020 microprocessor but reportedly can be upgraded to newer technologies, including the Motorola 68030 microprocessor, which are scheduled to be available later this year.

In addition to the VMEbus, the series features Motorola's System V/68 Release 3 implementation of AT&T's Unix System V, Release 3 with remote file sharing. Standard protocols include the Manufacturing Automation Protocol and Technical Office Protocol for industrial automation and IBM's Systems Network Architecture for connections to IBM mainframes.

The systems are scheduled to be available in the fall.

The work group model ranges in price from $7,000 to $11,000 in OEM quantities. The OEM price for the small department system ranges from $14,000 to $25,000. The OEM price for the large department system ranges from $18,000 to $55,000.

Qantel packages business system for PC AT

HAYWARD, Calif. — MDS Qantel, Inc. has announced the packaging of its Best/AOS operating system and Q8K coprocessor board with an IBM Personal Computer AT-compatible system.

The package, called the Qantel System 15, is a multiuser system designed to let first-time business customers use minicomputer-oriented applications on the PC AT architecture.

Qantel announced the Q8K add-in board about six months ago after announcing plans to port Best/AOS to personal computers a year ago.

The System 15 reportedly can be operated as a single-user system or expanded to support up to eight terminals. It is intended as an entry point to the Qantel line of business systems.

The system includes a Wyse Technology Wyse PC 286, the Zilog, Inc. Z-8000-based Q8K board with 512K bytes or 1M byte of memory, Best/AOS, an 84M-byte disk drive, a terminal controller board and a streaming tape backup.

The board is also available for the PC AT. Applications software based on Best/AOS includes packages aimed at the manufacturing, retail and hotel industries.

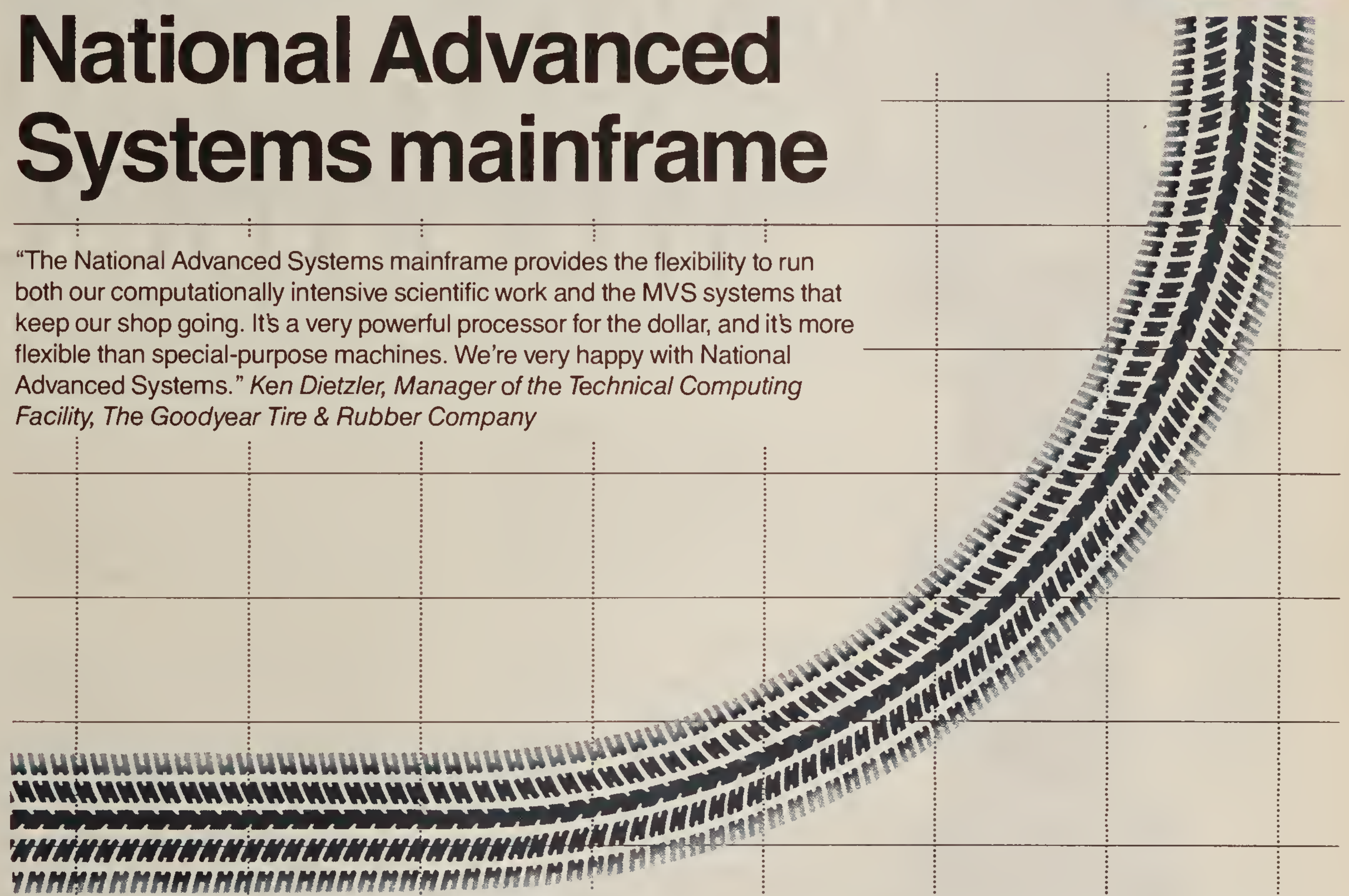
The System 15 can run either Best/AOS or the Microsoft Corp. MS-DOS operating system of the Wyse PC 286. However, the users cannot currently toggle between MS-DOS and Best/AOS. The system must be shut down and rebooted to switch between operating systems, and disk files must be partitioned for each operating system.

The System 15 has a suggested end-user price of $12,000. An annual license fee for Best/AOS is $250. When purchased separately, the Q8K board with 512K bytes of memory has a suggested price of $1,500, and the terminal controller board costs $1,650.

National Advanced Systems

Goodyear makes tracks with its National Advanced Systems mainframe

"The National Advanced Systems mainframe provides the flexibility to run both our computationally intensive scientific work and the MVS systems that keep our shop going. It's a very powerful processor for the dollar, and it's more flexible than special-purpose machines. We're very happy with National Advanced Systems." *Ken Dietzler, Manager of the Technical Computing Facility, The Goodyear Tire & Rubber Company*



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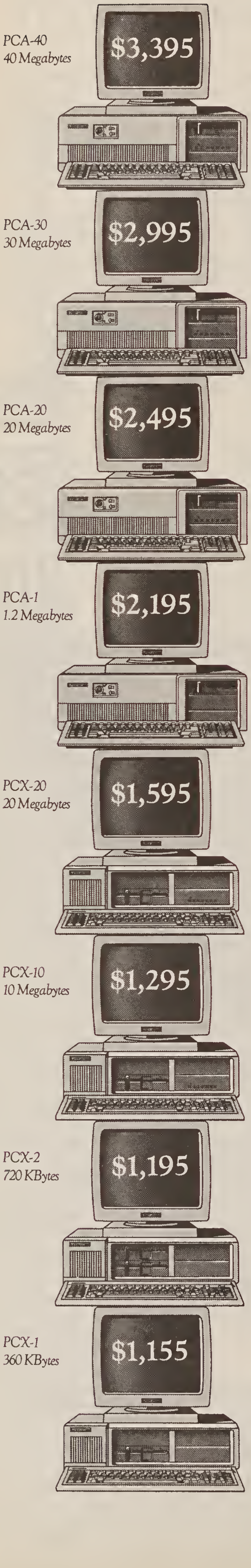

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Terminal

CONTINUED FROM PAGE 55

Esprit's distributors 30 days after receipt of order, Lanuto said.

The VT220-compatible terminal features a 132-col., 14-in. flat-face display and a dark phosphor background for viewing clarity and brightness.

Also featured is one-touch tilt and a "lazy Susan-like" swivel stand to adjust viewing angles.

The terminal's VT220 keyboard corrects what Esprit calls three deficiencies in DEC's VT220 keyboard layout. Three keys — Return, Backspace and Escape — have been relocated to be consistent with ergonomic standards, Esprit said.

In addition, the keyboard tilts in three positions and comes with Rolodex-like flip-strips for function key labeling.

Esprit is offering 24-hour replacement service and a 30-day guarantee with the Opus 220. A two-year warranty is also available for users who do not require maintenance within 24 hours, the company said.

'Attractive alternative to DEC'

"With the service we offer, we're providing an attractive alternative to DEC," Esprit President John Sasso noted. "Most clones are just shipping boxes and offering a warranty."

The Opus 220 replaces Esprit's Model 6515, which was introduced in the summer of 1985. Esprit shipped approximately 12,000 VT220-compatible terminals worldwide last year, Lanuto said.

According to International Data Corp. (IDC), a Framingham, Mass.-based market research firm, approximately 410,460 DEC/American National Standards Institute-compatible terminals were shipped in the U.S. last year.

Esprit shipped 6,000 units domestically, accounting for 1.5% of the total, IDC said.

Stuck in middle

CONTINUED FROM PAGE 55

single machine — has been advanced from early 1988 to late this year.

But even as IBM moves those processors closer together and develops its recently announced Systems Application Architecture for making different hardware systems transparent to programmers and end users, yet another system is finding its way into the mid-range maze.

The Unix-based IBM RT Personal Computer workstation was listed as one of those special-purpose systems when IBM most recently outlined the mid-range strategy. The RT PC is supposed to be a platform for engineers and other technical users. But a recent study by Framingham, Mass.-based market research group International Data Corp. and IBM's own research reportedly prove otherwise.

Apparently, the RT PC family, which recently was enhanced with more powerful models, is moving into the multiuser systems market. That's the same market served by the System/36. So, there's a little more confusion for the user when trying to decide which box to buy in the turmoil known as the mid-range.

Connolly is *Computerworld*'s senior editor, systems & peripherals.

Floating Point

CONTINUED FROM PAGE 55

ing in a dedicated special-purpose engine, said Russ Doty, DEC product manager of high-performance systems for the engineering systems group.

DEC opted to bundle its VAX computers with the Floating Point processor instead of developing its own because the market for processors, although growing rapidly, is still relatively small, Doty explained.

"We chose to work with Floating Point Systems on this because they have a proven native system and a library of applications," Doty explained. While the VAX systems can perform the analysis batch operations without a Floating Point processor, users have been demanding a faster runtime performance, Doty observed.

Because the Floating Point processor runs in parallel with the VAX computer, large computational jobs do not degrade VAX performance or make the VAX system unavailable to on-line users, Doty said. The bundled processors automatically assign computer-intensive jobs to the Floating Point processor, he added.

"The biggest change the users know is getting the results back quickly," he explained.

The packaged processors can run as stand-alone systems, or the Floating Point processors can be shared by a number of VAX systems either in a local-area network or a Vaxcluster, the vendor said.

FPS M64 processors run widely used engineering and scientific applications such as MSC/NASTRAN from the National Aeronautics and Space Administration.

Prices for the VAX 8550, 8700 and 8800-based systems depend on the configuration. A 8550-based system using an M64/60 processor begins at $1 million. A similar 8800-based system starts at $1.5 million. The 8200-based system with the M64/30 processor begins at $330,000.

DEC said it will provide contract service for both Floating Point and DEC gear if the customer purchases the hardware under the new agreement. Floating Point processors purchased outside the DEC agreement will not be serviced by DEC personnel, the vendor said.

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NEW PRODUCTS

Turnkey systems

NBI, Inc. has announced the **Pro-Publisher Plus** electronic-publishing workstation that connects to NBI's departmental computing system.

The Pro-Publisher Plus is a smart terminal attached to an NBI 520 or 570 minicomputer. It features high resolution of 1,024 by 1,440 pixel, a 17-in. monitor, keyboard and mouse. It also features a what-you-see-is-what-you-get display and software for document composition, chart graphics, spreadsheet, design graphics, spelling and equations.

The Pro-Publisher Plus is priced at $6,500.

NBI, P.O. Box 9001, 3450 Mitchell Lane, Boulder, Colo. 80301.

Processors

Force Computers, Inc. has introduced a VMEbus-based computer system called **Focus 32**.

The desktop-size system comes with the PDOS operating system, read-only memory, random-access memory and hard and floppy disk drives. It is also said to communicate with industry-standard peripherals including printers, plotters and terminals.

The minimum configuration employs six VMEbus boards and has space for six more. It features a 20-MHz engine, an intelligent eight-channel multiprotocol serial I/O board, an intelligent small computer systems interface bus host controller and a floppy disk controller.

Focus 32 starts at $29,900.

Force Computers, 727 University Ave., Los Gatos, Calif. 95030.

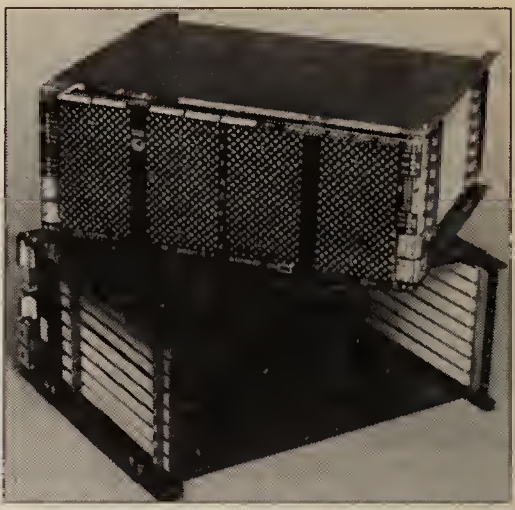
MDB Systems, Inc. has announced the **MLSI-BPA84-C/D**, a backplane and card-cage assembly said to accommodate Digital Equipment Corp.'s Microvax II and PDP-11/83 CPUs.

The assembly can house eight quad-size or 13 functional dual-size modules or any combination of the two. It has extended Q-22 bus throughout, except on slots C and D of rows 1, 2 and 3, which constitute the C/D interconnect.

Other features include a built-in removable bus termination.

The MLSI-BPA84-C/D costs $515.

MDB Systems, Box 5508, 1995 N. Batavia St., Orange, Calif. 92613.



MDB Systems' *card-cage assembly*

H&A Computer Products, Inc. has announced a timer card called the **Date and Time Board**.

The Date and Time Board is said to keep the date and time in independent battery-backed registers that can be read from the IBM Series/1. It occupies one I/O slot in the Series/1 and features a battery said to last up to 10 years. The board comes with software to set and read the time.

The Date and Time Board costs $600.

H&A Computer Products, 522 Washington St., San Francisco, Calif. 94111.

NBI, Inc. has introduced the **NBI 520** minicomputer.

The NBI 520 is said to be able to support up to 16 users and provide up to 212M bytes of storage. It supports specialized applications software such as data bases, calendaring and scheduling, legal billing and accounting and electronic publishing.

It utilizes a 32-bit Motorola, Inc. 68020 processor and VMEbus.

The NBI 520 is priced at $18,900.

NBI, P.O. Box 9001, 3450 Mitchell Lane, Boulder, Colo. 80301.

Printers/Plotters

Kyocera Unison, Inc. recently announced the **F2010 compact laser printer.**

The F2010 comes with 1.5M bytes of random-access memory. It offers 10 page/min printing and 300 by 300 dot/in. resolution.

Other features of the compact laser printer include a front control panel for selection of emulation modes, font styles and page orientation.

The printer also has dual 250-page continuous-feed paper trays; a collator; 36 resident fonts; four dynamic fonts; and download font capability, according to the vendor.

The F2010 includes an RS-232 serial port and a Centronics Data Computer Corp. parallel port.

The Kyocera F2010 printer costs $4,695.

An optional sorter features a top bin that holds up to 150 sheets as well as four lower bins that hold up to 25 sheets. Each costs $600.

Kyocera, P.O. Box 3056, 3165 Adeline St., Berkeley, Calif. 94703.

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IN DEPTH

Technology transfer

How U.S. West brought AI to its employees and technology awareness into the organization

BY JAMES LEDBETTER

As the information systems director in your organization, you recognize that some of your systems are outdated. The staff you oversee is highly technical, but in the rush to get the next release out, put the current fix in and deal with myriad other day-to-day problems, there isn't time to keep up with advances in information technology.

Although your staff occasionally shows some resistance to change, the real problem lies in its lack of understanding about new technologies. This problem results in an inability to apply new technology to the business and MIS problems your organization faces. The creative spark within your staff has died down to a flicker because of the lack of ongoing education. But you can improve the likelihood that implementations will succeed by fanning this creative spark through technology transfer.

The process of deploying a technology to achieve a business objective means acquiring a skill external to your organization and bringing it within. Local technology transfer is the practice of using that technology within the organization in a variety of ways. The technology-transfer process exists in every new project implementation.

U.S. West Advanced Technologies, an internal subsidiary of U.S. West, Inc., was formed in August 1985 with the mission of directing "the use of technology in achieving the long-term profitability of U.S. West." Advanced Technologies focuses on development of strategic markets, product and service development, networks and strategic computer planning.

U.S. West, one of the seven regional Bell holding companies, is composed of regulated subsidiaries, including Mountain Bell, Northwestern Bell and Pacific Northwest Bell. Within the company is also a variety of unregulated subsidiaries such as U.S. West Direct, U.S. West Cellular, U.S. West Information Systems, U.S. West Knowledge Engineering, Betawest Properties and U.S. West Network Systems, Inc. Each subsidiary requires various levels of information systems support.

Within U.S. West Advanced Technologies, a number of emerging technologies, including expert systems, relational data bases and natural-language processing, hold great potential for exploitation within the business. Recognizing that the problems of transferring technology exist within U.S. West and that competitors with more effective information systems would hold a competitive advantage, the Information Technologies division within Advanced Technologies (AT/IT) was motivated to build methodologies for technology assessment and for technology transfer.

AT/IT designed the methodologies to provide a mechanism to assess a technology's potential impact on U.S. West and to then shift toward use of this technology if the assessment is favorable. The transfer methodology also provides a mechanism for technology transfer as a result of market pull rather than technology push. With this in mind, AT/IT initiated an Advanced Technology Symposium program.

Facilitating the transition to new technologies is what technology transfer is all about. A broad view of information technology transfer is the concept of transforming an idea to system implementation or product development.

Setting the climate

Technology transfer in information systems normally involves the implementation or the upgrading of a system. Implementing a new system most often results from a technology transfer in which the function has not yet been mechanized. New systems are also implemented to replace technically or functionally obsolete systems. Upgrades frequently result in more efficient or effective technical functionality. In each case, though, a need to effectively use a new technology is part of the requirements of the innovation.

One of the most effective ways to sow technology transfer

KEVIN POPE

- **Fanning your staff's creative spark**
- **Objectives: Inform, solicit, connect**
- **Focus groups are idea generators**

Ledbetter is a technical director in the Technology Assessment and Transfer Group within the Information Technologies division of U.S. West Advanced Technologies in Englewood, Colo.

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is by infusing knowledge concerning the technology into the organization and establishing a broad awareness of the technology and its potential to the business. This is particularly effective when the technology is new and different for your organization.

Knowledge infusion means acquiring knowledge externally and bringing it into the organization. This results in two important long-term benefits. First, it can initiate that creative spark in your personnel. The best case in systems development is when the developers consider multiple ways of solving a problem instead of using a tried-and-true method that has been in existence for who knows how long. Once knowledge is planted within the organization, diffusion of this knowledge will increase the chances that this creative process will begin. The odds increase by virtue of the number of people exposed.

Second, knowing about the technology reduces fears about it. A person who understands the benefits, shortcomings and capabilities of a technology will more likely risk using it.

A nurturing process

The seeding process provides the best opportunity for absorbing the details of the technology. Further exposure provides a nurturing process, so that a case can be built for considering it as an alternative in development.

For example, a relational data base might be seen as an important technology because it could make data easier to use. If this is the case, details on relational systems — capabilities and drawbacks, who uses these systems within your industry, how they are used and potential internal applications ideas — should be presented early for developers' consideration. Presenting it well ahead of actual use assists in establishing the viability of the option.

Determining which technologies should be targeted is complex and often becomes a political exercise. The choice relies, in large part, on identified business goals and the ability to map emerging technologies to these goals. At U.S. West, a broad spectrum of technologies have been identified in this manner.

Once the technologies are targeted, the next question is "What now?" The transfer process must start somewhere. With this in mind, U.S. West AT/IT initiated its symposium program.

The first U.S. West AT/IT symposium concentrated on artificial intelligence. It was considered a major success and is the real impetus for continuing the program. The second symposium, on architectures and standards, offered participants a detailed look at the architectural plans under development to guide U.S. West into the future.

The third symposium, to be held this week, focuses on office automation in the 1990s and is designed to provide a view of what office automation will entail between 1990 and 1995. A relational data base symposium, to be held in June, is slated to present the relational approach as an alternative to current data base techniques and encourage a transfer to relational data base technology.

Objective: To motivate

The objectives for the symposium program are shaped around three ideas:

- Get information about the technology out to those who might be able to use it.
- Solicit participation in the technology-transfer process from attendees. This includes continued identification of potential applications in their home organizations, promoting the technology's use in new application development and serving as a local champion, should the opportunity arise.
- Build better human interfaces between technology planning groups at Advanced Technologies and the developers in the subsidiaries.

These general objectives are technology independent and are oriented toward motivating people in the organization to work more effectively, to serve as change agents for the technology and to exploit inherent synergies between different organizations. Other, secondary objectives include such ideas as strengthening ties

A U.S. West *focus group in action*

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with academic leaders in the particular technology and providing a valued product to the rest of U.S. West.

The audience for each symposium is carefully selected, with those individuals who are change agents within their organizations and those who are technology- or planning-oriented high on the list. For the most part, information systems professionals and end users are encouraged to participate. The audience composition depends on the targeted technology, but a broad spectrum of work functions and responsibilities generally works best.

Focus groups

One of the most important parts of the symposium is the use of focus groups. Objectives for the focus groups vary, depending on the needs of the audience. They can range from identifying application opportunities — as was the case in the AI symposium — to validating the conceptual model or specific architectural components, as in the architectures and standards symposium.

The focus groups give the symposium participants a chance to brainstorm on technology issues with their peers from other U.S. West organizations. The facilitators are formally trained to get the best efforts out of the group. Besides meeting the primary objective set for the focus group, brainstorming provides two other benefits. The participants contribute to the success of the symposium and gain a sense of buying into the ideas presented. They also interact with a cross section of individuals from other parts of U.S. West, thus promoting a sense of corporate team work.

For U.S. West, as with all businesses, the ideas for applications must be realistic for the business environment. To be accepted, the applications must meet one of four general criteria:

- Provide new revenue opportunity.
- Provide product differentiation.
- Reduce costs.
- Offer strategic implications for the business.

Focus groups are used to generate ideas, not analyze applications. Each idea that meets one of the four general criteria is accepted and listed. The group summarizes and gives priority to these ideas, using the same brainstorming technique, minimizing discussions about the relative merits of each. A presenter for each group reports the group's findings back to the symposium as a whole.

Not surprisingly, the groups develop a lot of ideas in common. This is one place in which an end-user orientation might be more advantageous than one segmented by professional type. Needed applications and additional functionality in more diverse segments of the business are easier to identify from this point of view.

In the agenda, the timing for the focus groups is carefully selected. At the relational data base symposium, for example, focus group participation will be at the end of the symposium because the participants will by then have been exposed to the technology and can begin to think about identifying and applying application opportunities. At the architectures and standards symposium, the focus groups were scheduled in the middle of the event: The major objective was to identify weaknesses in the conceptual model and the specific architectural parts, which were then addressed in a subsequent presentation.

Each group is usually limited to eight to 10 people to make it manageable. The facilitator of each group has prior formal training in nominal group techniques. The facilitator has also reviewed key elements considered critical to the focus group objectives, including impact on the business, appropriate scope of problem, ability to expand identified applications incrementally, identification of a receptive environment, some match with available resources and the creation of a salable product.

Using focus groups, for example, 44 unique, realistic application ideas were generated at the AI symposium. These ideas were subsequently classified into different types of AI problems and then mapped against stated business goals. A direct result of this process was the formation of an expert systems group within Advanced Technologies and the development of an AI lab.

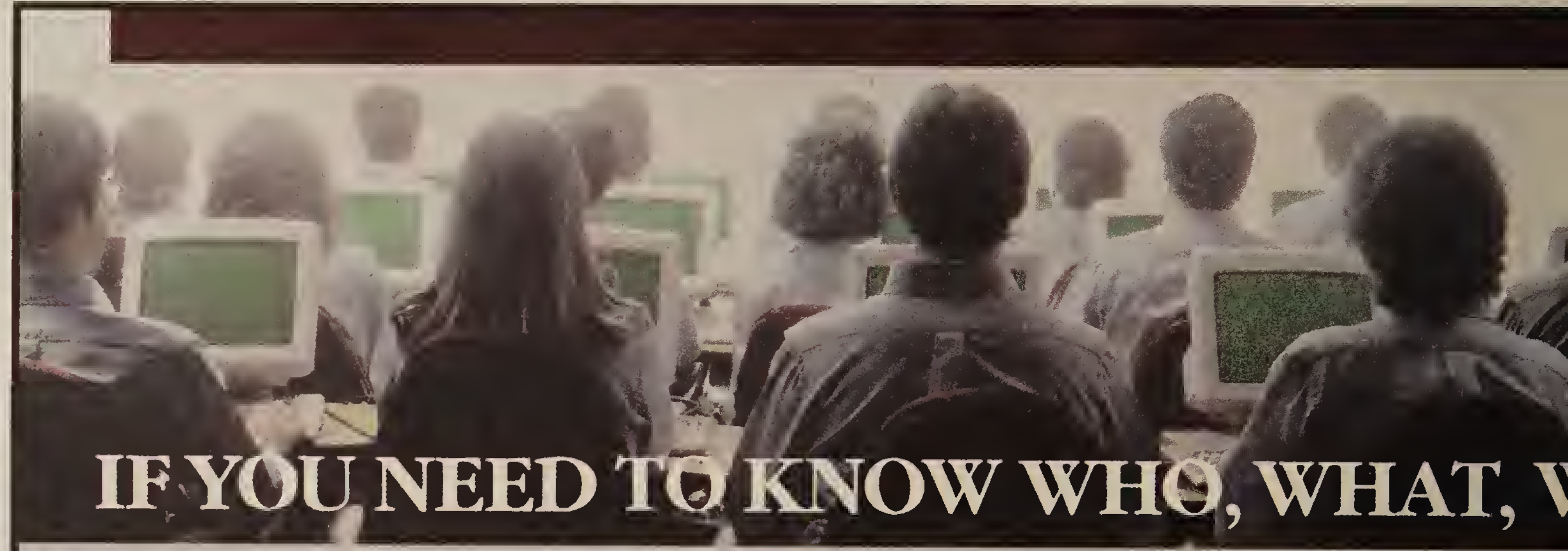
Targeting subject matter

Subject matter for each symposium is based on the particular technology, objectives of the symposium and the expertise of the targeted audience. Level of detail depends on the desired level of expertise identified when selecting the audience.

For example, for the upcoming relational data base symposium, the selected audience ranges from analysts to directors. The desired level of expertise is identified as those with no knowledge of relational data base technology through those with only a passing understanding, and the topics have been chosen to provide a high-level, comprehensive look at relational data base technology.

The symposium will begin with a presentation on mapping relational technology and its capabilities to business objectives. The next speaker will introduce relational data base theory and will speak on implementing this theory in a data base system. A vendor presentation on relational data base machines will cover hardware implementations of this approach. Another speaker will cover issues that are unique to distributed relational data base systems.

Since the regulated subsidiaries of U.S. West historically show heavy use of hierarchical data bases, namely IMS, a talk on the subject of migrating from this approach to a relational approach will be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included. Representatives from within U.S. West who have successfully implemented relational systems will give examples of internal success stories and sources of available application expertise and also make up a panel open to questions. Participants are encouraged to find out why a particular decision was made concerning implementation choices and to get more detail on how successful the applications have been.

There are limitations to what one can understand in a short time frame, particularly from a high-level overview, so the participants will be encouraged to seek out additional expertise when it is needed rather than blindly charge ahead in system development or purchasing based on the contents of the symposium.

> ONE OBJECTIVE that the officers help achieve is pointing out that the symposium is not just a show to attend and, afterwards, to return to business as usual.

A speaker from Bell Communications Research Corp. will detail work plans in progress. Finally, an independent industry expert will speak on what is possible with relational systems and challenge participants to consider this approach for future applications.

After each speaker, there will be a question-and-answer period. This gives the attendees a chance to interact with the speakers and to obtain more detailed knowledge in each area. The time for each speaker's presentation is kept reasonably short — between 30 and 45 minutes — to provide a maximum range of topic overviews and avoid dwelling on any one area for too long.

Guidelines for success

At least four, and preferably six, months are needed to carry out the planning process and the symposium production itself. Identifying the objectives of the symposium is a key factor that must be done as early as possible and before selecting what will be the target audience, topics, speakers and exhibitors.

Certain elements of each symposium are being standardized. Each symposium is an extension of the previous one, with only the subject matter changing from one to the next. Each is generally about two days in length, with presentations from a diverse cross section of individuals, vendors and academics who are considered industry experts.

U.S. West AT/IT found the following guidelines facilitate each symposium.

Audience. For a U.S. West AT/IT symposium, the number of participants is generally 100 to 150. Invitational slots are initially allotted based on a organization's size, the size of its DP organization and the perceived need for participation. One problem is that individuals intimately involved in the subject technology are occasionally overlooked in the invitation process.

Letters are sent to upper management detailing the symposium, its objectives, the number of slots allotted and the type of audience desired. Invitations are also sent to outside change agents and strong leaders operating within the symposium's discipline. The planning must be flexible enough to accommodate everyone invited.

Logistics. The symposium is held offsite at a hotel or convention center. A block of rooms is reserved for those from outside the area. In general, Advanced Technologies pays for the cost of producing the symposium and food.

Conference handouts at check-in time should include the agenda, the proceedings, relevant literature, biographical sketches on the speakers, a critique form, information about the facilities and a list of attendees.

Guidelines are being established for invitations, registration applications and other elements in which standardization will not impact symposium content or inhibit the symposium manager's creativity. U.S. West corporate conference planning services are used to minimize duplication of effort and take advantage of internal expertise for conference planning.

For both the facilities and the speakers, arrangements should be confirmed in writing. If a speaker is engaged via telephone, this must be followed up with a written confirmation detailing the topic, date, length of talk, fees and any other arrangements agreed upon. Requiring an abstract from each speaker three months ahead and a full text copy or copy of presentation material one month ahead allows coordination of speakers' topics to avoid overlapping subject coverage. It also allows distribution of the proceedings when participants check in.

Executive support. U.S. West corporate officers generally provide the executive welcome and closing remarks. This demonstrates the executive support critical in innovation and begins the nurturing process for this seed of knowledge. The executives also offer the best perspective on the business goals and the need for innovation to achieve these goals.

Finally, the executives lend some urgency to the task to be done, namely, go back to the home organizations, look for potential application areas and champion efforts to innovate using the new technology.

One objective that the officers help

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achieve is pointing out that the symposium is not just a show to attend and, afterwards, to return to business as usual, but rather is an opportunity to learn about and use this new knowledge to make U.S. West a more effective competitor.

Vendor participation. Depending on what the objectives are, a representative sampling of vendors is invited to present products and services. This gives participants the chance to see some of the offerings in the area of the subject technology. It also provides the opportunity to make industry connections for follow-up information.

The exhibits must be placed on the agenda so that they do not compete with featured speakers. The vendors typically pay all expenses associated with their display and are often willing to sponsor or cosponsor other symposium activities.

Vendors are a good source for speakers, since they are often called on to talk about the technology on which the product line is based. U.S. West AT/IT encourages vendor speakers to deal with technologies, issues and ideas, not with products. In addition, the vendors provide a good source of ideas on how to run a more efficient symposium, as they are normally involved in quite a few of them.

The ground rules for exhibitors must be spelled out in writing. The details should include expected arrival and departure times, specific exhibit space, which parts of the conference they may or may not attend, the use of hospitality suites, conference proceedings, attendee list availability and cost items for which the exhibitor is responsible, including transportation, lodging and meals. In addition, each vendor's exhibit facilities requirements must be documented well in advance to ensure these facilities are available at the site and included in the agreement with the hotel.

To everything, a season

In addition to the tangible results, others exist that are not quite so obvious. U.S. West is in an embryonic stage in AI development but has begun to actively participate in industry activities. This increases corporate visibility in an area targeted as a strategic technology. It also enhances an image as a technology leader, which in turn helps to recruit needed technical talent in short supply.

This program also increased the visibility of the Advanced Technologies group as a whole within U.S. West. This, in turn, has led to increased communication between subsidiaries, a sharing of knowledge and in general, an increase in the synergy of an organization this large.

The symposium program has highlighted business goals and objectives and helped U.S. West understand the relationship between emerging technologies and these goals. Overall, the U.S. West AT/IT symposium program has indeed sown future technology transfer. These seeds of information are growing, and the technologies identified and presented last year are in the process of being exploited today. •

Cost planning: Down to detail

When budgeting for a symposium, three major areas must be considered: facilities, speakers and internal labor.

Facilities. The cost of producing the symposium itself includes the cost of a facility large enough to hold the participants as well as breakout rooms for the focus groups. Food, including breakfast, lunch, coffee breaks and some portion of the welcome reception, is also included in this figure.

Other costs include support staff, transportation for guests to and from the hotel and audiovisual equipment. Photographs for a company newsletter are good publicity for future symposiums, so a photographer might be included.

Speakers. Another major budget item is the cost of the speakers. These costs depend on the symposium's objectives and the speakers' availability and reputation. Speakers not connected with a particular vendor are the most expensive. Vendors are often willing to provide expert speakers with excellent reputations in exchange for the visibility this provides. Academia also provides a good source for expert speakers at reasonable prices. Speaker costs range from $500 to $6,000. In addition, transportation (both airfare and local), accommodations and meals are normally included.

Internal labor. The third item — the internal labor used to produce the symposium — is one occasionally overlooked. Any temporary or external labor is easily seen as a budget item. But the labor of company personnel must also be considered, since they will be distracted from their normal work during the time they are producing the symposium. By spelling out how much and when internal labor is required and the specific individuals involved, the internal costs will become obvious. To keep this hidden expense out in the open, it is best to initially include it as a budget item.

Other budget considerations. These include name tags, brochure printing, proceedings publication costs and the cost of attendee gifts. These miscellaneous items should be minimal compared with the three major areas.

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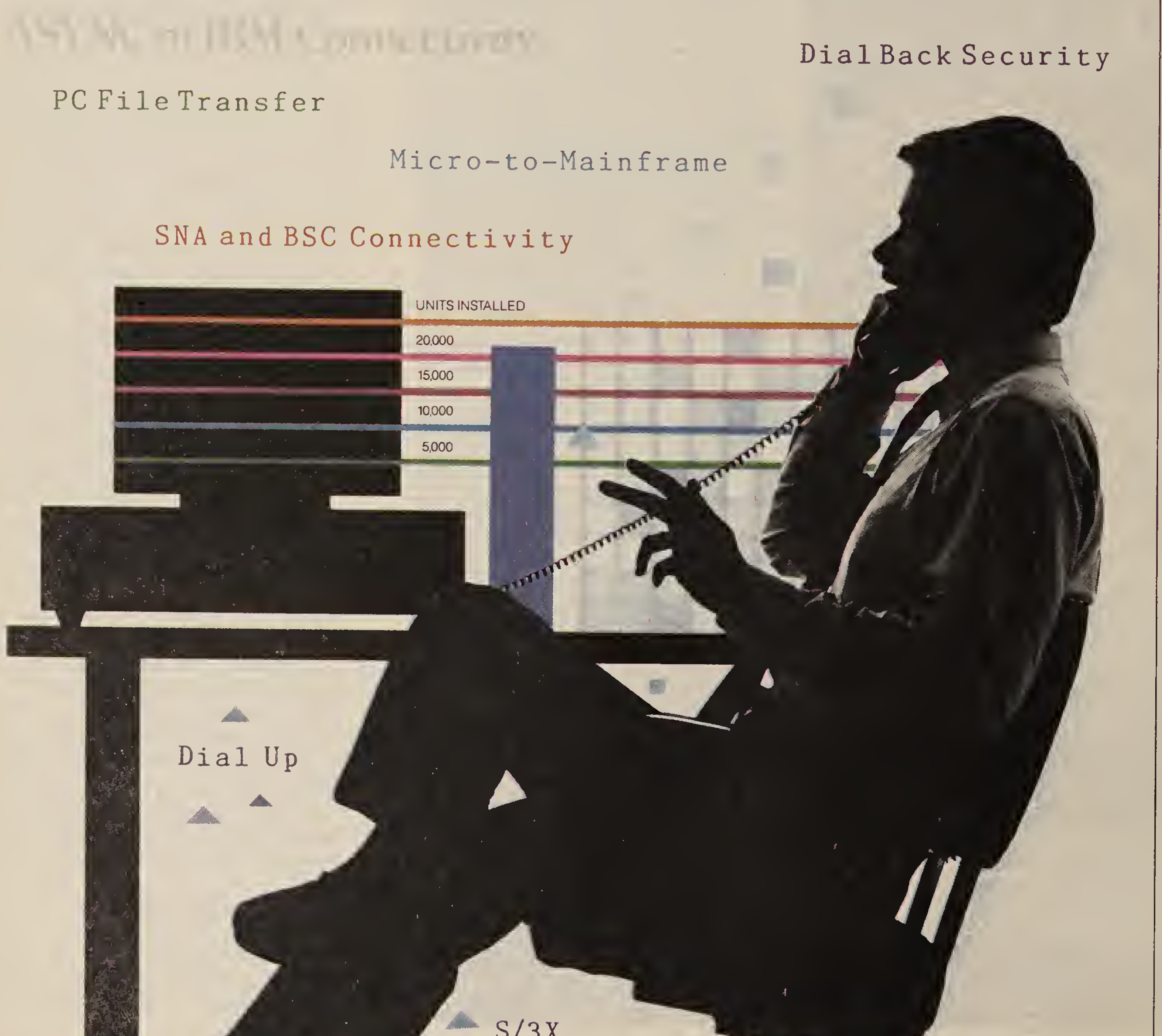

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The value of training in dollars and cents

It's time for training managers to promote their services in business terms

BY BERNIE NACHSHEN

Why doesn't MIS training get any respect? In the 20 years I have spent in the DP business, the training function has received a lot of lip service. But when hard times hit and budget cuts begin, top management's sonar homes in on MIS training as the first target. I think many trainers' frustrations lie in the fact that top management never grasps the value of training, by which I mean that more comes out of it than is put in.

I don't think top management is predisposed to thinking that training offers no value. Rather, there are just not many effective training proponents around. Too often, training is represented by individuals not directly involved in the training function who possess little or no knowledge of how to justify the benefits of investing in it. If training appears to offer no value, then funding is allocated only reluctantly because the department is perceived as not contributing to the company's mainstream functions or, ultimately, to its bottom line.

But why don't sales, marketing, manufacturing, engineering or even research and development consistently suffer this fate? Even MIS gets its additional CPU horsepower, direct-access storage devices, transaction-processing gear and system programmers if these items can be justified through the use of careful performance and capacity planning efforts.

P. CHARLES LADOUCEUR

But training is an afterthought. "Do we need training?" management asks. "Can't we do it with what we already have?" "Won't it chew up a lot of time?" "Won't it cost too much?" I am not saying that these questions should not be asked. However, when it comes to training, these questions take on an almost accusatory tone. There are two main reasons for the finger-pointing:

- Unless you are a company specializing in training, the training function — within MIS or embedded somewhere else in the company — does not seem to contribute to producing a service or product and shipping it out the door to collect revenue.
- Training managers, in many cases, lack the skills necessary to promote their operation within the company and fail to represent training in business terms: business plans, return on investment, contribution to corporate profit margins and so on.

When marketing says, "We will sell a hundred of these things for $500,000 with a $100,000 net margin," the value is understood. When manufacturing says, "We'll produce a thousand of these things at $500 per unit," that is quantifiable.

However, when training says, "We are going to train 10 new people on computer operations and MVS/XA," well, training does not offer the same impact unless the training manager elevates it to the same kinds of business terms, terms that can influence upper management.

What follows are some proven tools and techniques for raising the status of your training department. These tools can give the training department visibility and recognition as a business partner.

Return on investment

The net purpose of training is to develop skills — the talents for which a company is willing to pay. When a company hires an individual, the salary and any other compensation are based on how those skills can contribute to a company's business objectives. If a person is hired at a particular level — senior, junior, intermediate — for $35,000 per year, that person is supposed to act and perform at that level.

A question to consider, then, is, "How much do we need to invest in an employee to make him act like a $45,000-a-year person?" In other words, through an investment in training, can we develop needed senior-level skills? And, what would our return be on such an investment? This leads to the return on investment (ROI) formula (see chart page 71).

Basically, ROI is equivalent to the increase in skill level in salary dollars, minus the cost of training, divided by the cost of training. In the example,

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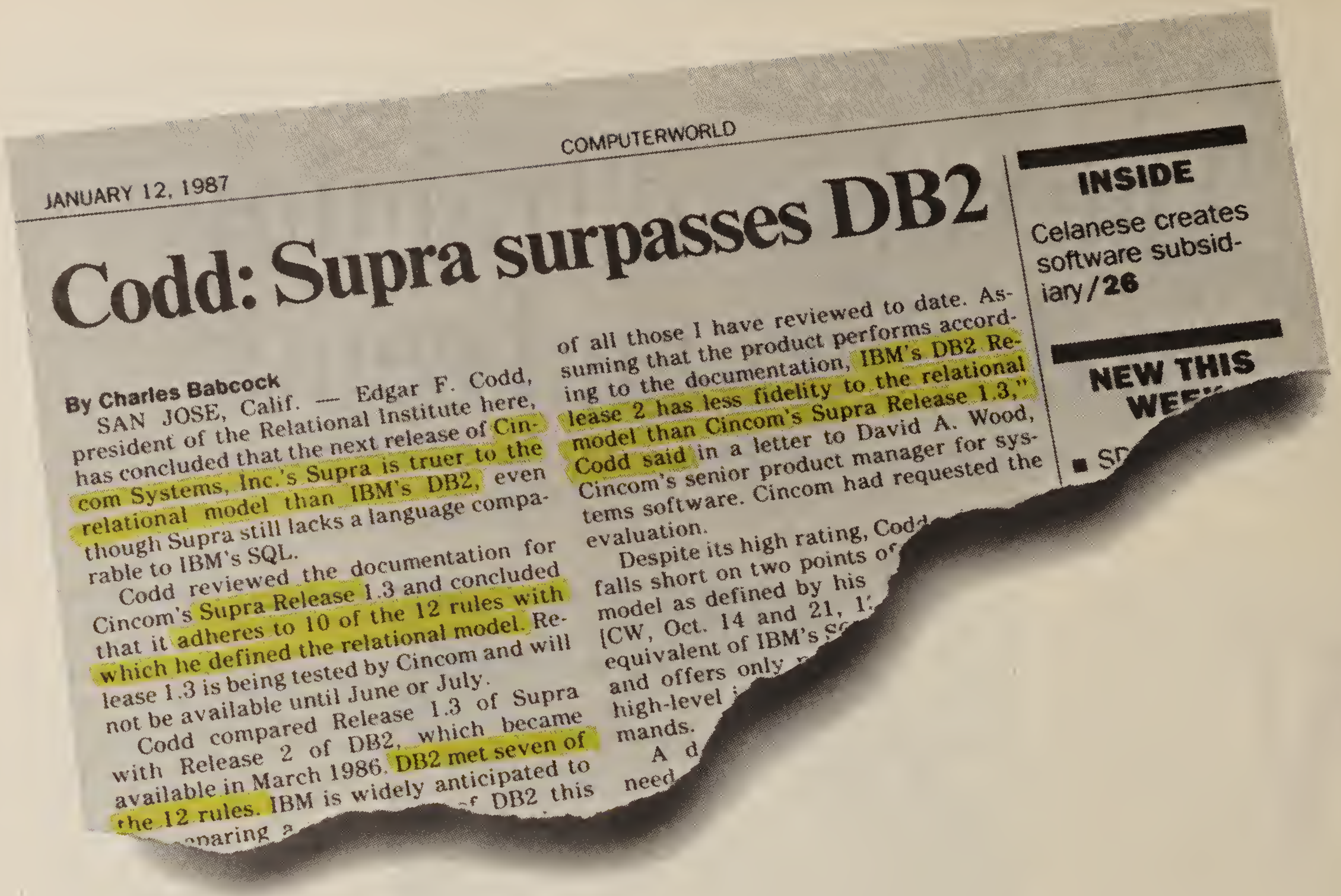
Nachshen is head of Cupertino, Calif.-based BN Associates, a consulting firm specializing in technical training, customer support and systems analysis.

……

- **Develop a business plan**
- **Money to be saved, money to be made**
- **Training as a reward**



JANUARY 12, 1987

COMPUTERWORLD

Codd: Supra surpasses DB2

By Charles Babcock

SAN JOSE, Calif. — Edgar F. Codd, president of the Relational Institute here, has concluded that the next release of Cincom Systems, Inc.'s Supra is truer to the relational model than IBM's DB2, even though Supra still lacks a language comparable to IBM's SQL.

Codd reviewed the documentation for Cincom's Supra Release 1.3 and concluded that it adheres to 10 of the 12 rules with which he defined the relational model. Release 1.3 is being tested by Cincom and will not be available until June or July.

Codd compared Release 1.3 of Supra with Release 2 of DB2, which became available in March 1986. DB2 met seven of the 12 rules. IBM is widely anticipated to
f DB2 this
paring a

of all those I have reviewed to date. Assuming that the product performs according to the documentation, IBM's DB2 Release 2 has less fidelity to the relational model than Cincom's Supra Release 1.3," Codd said in a letter to David A. Wood, Cincom's senior product manager for systems software. Cincom had requested the evaluation.

Despite its high rating, Codd
falls short on two points of
model as defined by his
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Celanese creates software subsidiary/**26**

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Sharon B. Weinberg, President of Codd & Date Consulting Group and a former relational database consultant with IBM® responsible for releases of DB2, will review Dr. Codd's point-by-point comparison of SUPRA Release 1.3 and Release 2 of DB2. She'll demonstrate why Dr. Codd concluded that SUPRA adheres to 10 of his 12 basic rules for the relational model, versus DB2's 7 of 12, and explain why he stated, "SUPRA's rating is the highest achieved of all those I have reviewed to date."

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Turning dollars into skills

The formula below gives management a clear idea of where its training dollars are spent. The training necessary for a $35,000/year, junior employee to develop the skills of a senior employee would generate a 66% return on investment.

Formula:

$$\frac{\text{Skills level increase (in dollars) - Cost of training}}{\text{Cost of training*}}$$

Example:

$$\frac{\$10{,}000 - \$6{,}000}{\$6{,}000} = \frac{\$4{,}000}{\$6{,}000} = 66\%$$

* This example assumes 20 days of stand-up lecture and lab training and includes the employee's salary for that time.

CW CHART

$10,000 (the skill-level increase), minus $6,000 (the cost of training), divided by $6,000 yields a 66% ROI.

In this way, training managers can represent the training investment in terms that upper management can appreciate and on which it can make realistic business decisions. If the return-on-investment numbers do not meet the company's ROI criteria, then the whole training function must be evaluated and made more cost effective.

Charles Baugh, manager of Amdahl Corp.'s National Education Center in Santa Clara, Calif., takes a different slant on ROI. "Our comprehensive MVS operator's training classes have shown to be an excellent investment," he says.

"If you calculate the per-minute cost of operating a large mainframe, you can easily see that a 30- to 40-minute initial program load (IPL) procedure could be very expensive. Through our operator training classes, we have avoided many expensive IPLs not only for Amdahl, but also, by training our field engineers in operations, for our customers."

Justify the investment

Training saves money and can improve the morale of an organization. These benefits can be quantified and presented to upper management. The following items are other ways in which to justify the training investment.

New-hire savings. When you upgrade your personnel's skills to handle new system requirements, you will probably need to hire only junior employees to replace those moving up. This saves placement agency fees — 15% to 20% of a first-year salary — and relocation expenses, which can amount to $60,000.

Control outside training expenses. In-house training allows you to limit sending employees to outside training facilities. At an average of $275 per student day, a five-day class can be expensive. When you include air travel ($400 to $500), lodging, meals and a car ($200 per day), it adds up. I'm not proposing that no one be sent to outside classes: Sending key people to meet peers in the industry, to get a fresh, outside perspective on what is going on and to bring that knowledge back is healthy and worthwhile. But, plain and simple, training self-sufficiency saves money.

Gordon Tannura, staff development coordinator for the Federal Reserve Bank of San Francisco has been creative in controlling outside training expenses. "By working with other companies in the area and creating a consortium, we can share training expenses and facilities for outside training," Tannura says. "We were able to save some $25,000 last year doing business this way." He adds that the consortium arrangement allows for peer communication and the sharing of ideas.

Retaining key people. One of the most critical considerations for retaining key technical personnel is keeping them technically up to date. Their values and futures are closely linked to possessing state-of-the-art skills. Offering in-house courses in new hardware and software systems eliminates or reduces the concern of being left behind, which is important for morale.

Gary White, manager of Digital Equipment Corp.'s Western Region Training Center, says, "Training provides multiple returns for us in morale, productivity and in helping our students achieve their career goals. Training is viewed as a reward."

Chargebacks

The MIS training function is a service. If this service is offered on a corporatewide basis, then the training manager should decide whether to seek upper management's approval to create a chargeback policy for departments using the service. Chargebacks for MIS services are well established, and users are held accountable for prudent and responsible use of these expensive resources. Should the same be done for training?

When training is paid out of corporate overhead, it is perceived as being free. Training is the only department that pays for no-shows. But if a department is charged for training when the enrolled student does not show or cancels on the morning the class begins, managers will certainly find incentive to be more responsible. If you want to place quantifiable value on training, chargeback is an effective vehicle.

Your training function will run much more smoothly if your fellow managers are committed to it, and chargebacks can help bring this about. If training affects a manager's budget, he is going to examine it carefully. He may even look outside for training if he feels it is more cost effective than what in-house training department offers. This would force the training department to be competitive and ensure that what it provides is needed by the company.

Chargeback makes the training department itself more aware of its value. If people are paying for training services, trainers feel they are offering something of value; if they don't produce, their customers will go to the competition. Most trainers, I believe, welcome this challenge and see it as a way of measuring their own worth to the company.

The training department's planning and cost-justification process may also become more precise with a chargeback policy. Through in-house planning procedures, managers can find out about future training requirements: What will it cost to develop these courses? What will the per-student charge be for each course? What commitments are department managers willing to make before the training department undertakes course development?

With this and other information, the training department can make intelligent business decisions about development and cost-justify additional training funding, based on its research of corporate needs and what managers are willing to pay.

"Chargebacks force management to evaluate and plan its training requirements more carefully. This, in turn, helps training to better plan its use of resources and facilities to meet those requirements," Amdahl's Baugh says.

Also, Federal Reserve Bank's Tannura notes, "By charging our personal computer trainees a small percentage over our actual costs, we are able to finance

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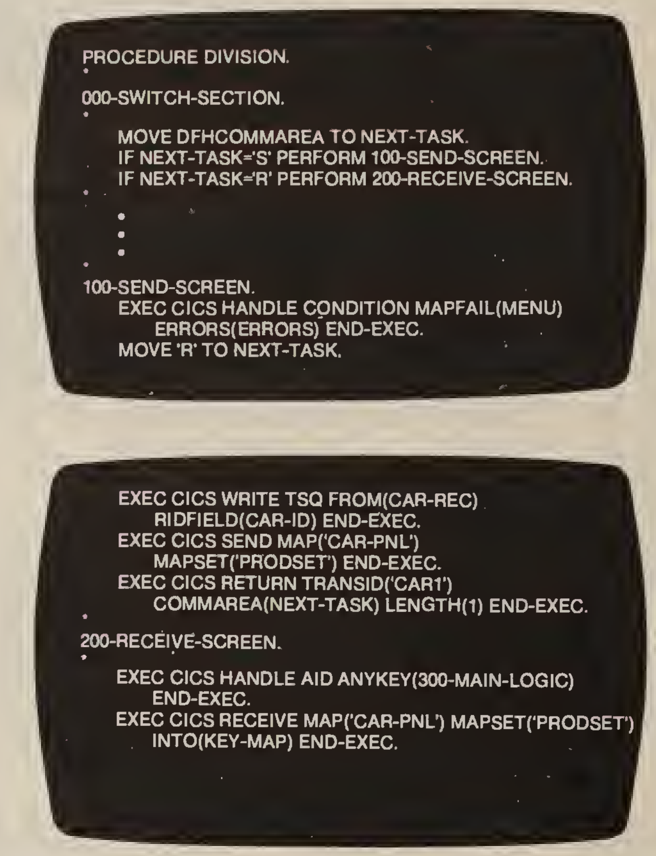

```
PROCEDURE DIVISION.
000-SWITCH-SECTION.
.
    MOVE DFHCOMMAREA TO NEXT-TASK.
    IF NEXT-TASK='S' PERFORM 100-SEND-SCREEN.
    IF NEXT-TASK='R' PERFORM 200-RECEIVE-SCREEN.
    .
    .
    .
.
100-SEND-SCREEN.
    EXEC CICS HANDLE CONDITION MAPFAIL(MENU)
        ERRORS(ERRORS) END-EXEC.
    MOVE 'R' TO NEXT-TASK.
```

```
    EXEC CICS WRITE TSQ FROM(CAR-REC)
        RIDFIELD(CAR-ID) END-EXEC.
    EXEC CICS SEND MAP('CAR-PNL')
        MAPSET('PRODSET') END-EXEC.
    EXEC CICS RETURN TRANSID('CAR1')
        COMMAREA(NEXT-TASK) LENGTH(1) END-EXEC.
.
200-RECEIVE-SCREEN.
.
    EXEC CICS HANDLE AID ANYKEY(300-MAIN-LOGIC)
        END-EXEC.
    EXEC CICS RECEIVE MAP('CAR-PNL') MAPSET('PRODSET')
        INTO(KEY-MAP) END-EXEC.
```

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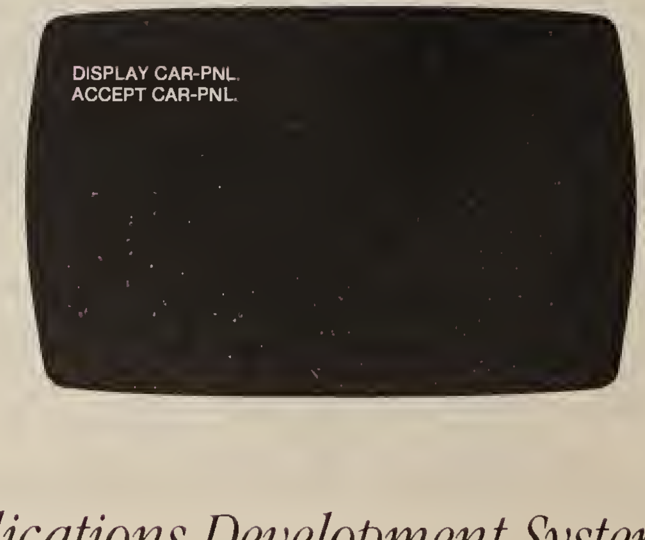

```
DISPLAY CAR-PNL.
ACCEPT CAR-PNL.
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additional facilities for our students."

There are a couple of things to look out for prior to forging ahead with chargebacks.

- Don't buck the corporate culture if chargebacks are not part of the way your company conducts business.
- You better deliver. If students are not getting the expected skills out of training programs, management will find out. Using your own chargeback scheme, management will quickly show you how much it is spending on training and how it's not getting what it's paying for. In other words, chargebacks work both ways.
- Make the chargeback system as simple as possible. Something like a per-student-day charge should do. If you are offering a five-day class, then five times this number will be the chargeback cost. A class in operating systems internals should be more expensive than an introduction course in DP. But if there is some way of averaging all this, you may be better off in the long run with the chargeback approach.
- Chargebacks involve some overhead. You must install some systems that track items such as user accounts, user billings, student records, forecasts of training usage, training cost accounting and so on.

All this may seem like a lot of effort. Generally, this is true — but it's an investment that will pay off in time. Since training is discussed in business terms at all levels of management like any other department, by initiating the chargeback approach, you establish a culture in which training reflects good business judgment.

The above examples are all quantifiable and will quickly get upper management's attention. These kinds of dollars-and-cents scenarios place training in a cost-effective light and subsequently influence key decisions.

DEC's White says, "People believe that training is necessary. The challenge in the 1980s is to quantify the value of training, both by the training department and the user of training services."

The training business plan

So where is your training department going? What does it expect to accomplish, and how does it fit into the corporate objectives? What resources does training need, and what will they cost? These are good, solid business questions that any manager should be able to answer and document in a business plan.

While not illustrating a full training business plan, the following outline will be helpful:

The charter. What is the function of your training department and how does it fit into corporate business objectives? For example, a charter could read: "The training department is responsible for developing critical skills for the MIS division's technical personnel that will allow the effective flow of information throughout the company, contributing to our company's competitive position in the marketplace."

Objectives and strategies. What are you going to produce during the next 12 months? This could begin with a definition of training needs, followed by measurable goals that the training department will accomplish in order to satisfy these needs. This could include specific types of courses and short outlines for each, specific skills to be learned, major projects to be undertaken and the number of students to be trained.

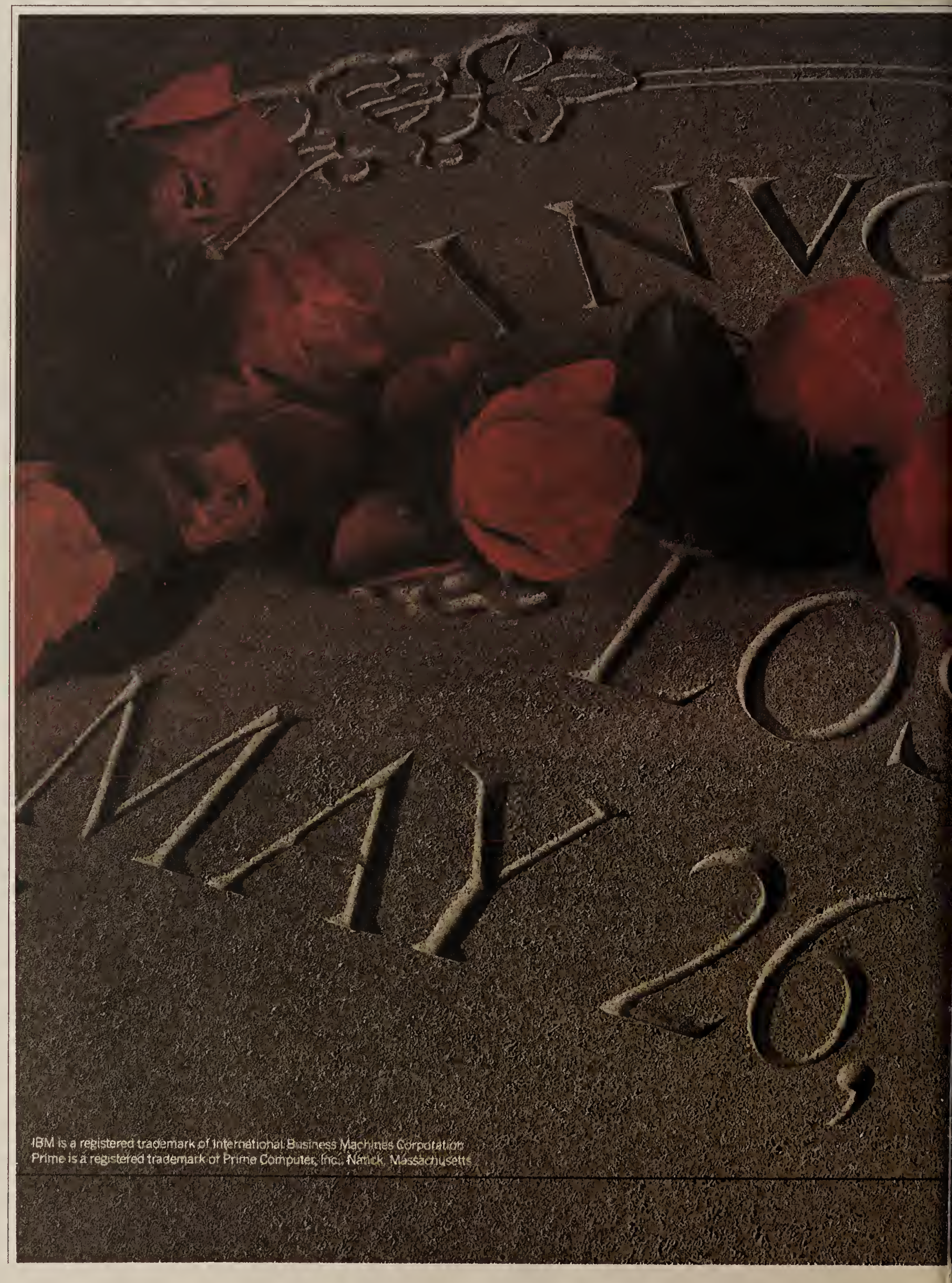
Also included in this section should be strategies for achieving success — for example, using more multimedia delivery techniques rather than stand-up lectures — and why, in cost-effective terms, you have selected these strategies. Show that you know the business your company is in — the competition, marketplace and so on. Then, present your ideas about the position the training department should take to accommodate changing business conditions. In other words, show that you understand the big picture.

> "PEOPLE believe that training is necessary. The challenge in the 1980s is to quantify the value of training, both by the training department and the users of training services."
>
> GARY WHITE
> DIGITAL EQUIPMENT CORP.

Ted Cocheu, president of Performance Technologies, Inc. in Los Gatos, Calif., and formerly training manager at Memorex Corp., says, "You must ensure that your training plan is tied closely to the business plan of your organization. You must help the company adapt to the changing business environment to meet short- and long-term objectives."

Resource requirements. What do you need to meet your objectives? Requirements to consider include the number of instructors, documentation, classrooms and related facilities, MIS facilities (including personal computers and related software), other tools and packages needed to run the training department, outside consultants and vendors with packaged training.

Budget requirements. What will it cost to meet your objectives? Essentially, this is the cost of your defined resources. You might consider presenting the budget in the form of alternatives, such as, "If



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management elects to meet just basic objectives, it will cost 'X' amount of dollars;" "If corporate management wants to achieve these additional objectives, incremental costs will be the following;" and so on.

Department profile. Under this heading you might want to include a description of the training department, the history of the department and why it was originally created. Make sure to include key personnel and their backgrounds, the critical skills they bring to the training department and their major accomplishments.

Assumptions and considerations. This is generally an area in which you can tie up loose ends as well as outline the essential support you will need to achieve success for the training department. You can also specify the programs and projects you will not be undertaking, based on the budget and the resource requirements that have been submitted to date.

Examples of these items include the following:

- The training department will receive 30 days of subject-matter expert time from the systems programming department in order to develop MVS/XA courses.
- Training will not undertake the development of the corporation's computer operations training program in the next year.

Instead, the training department will act as a coordinator in the use of outside vendor training for this specific area of operations.

- Because of resource constraints, no more than 10 students can be trained for any single course offering.

What management wants to hear

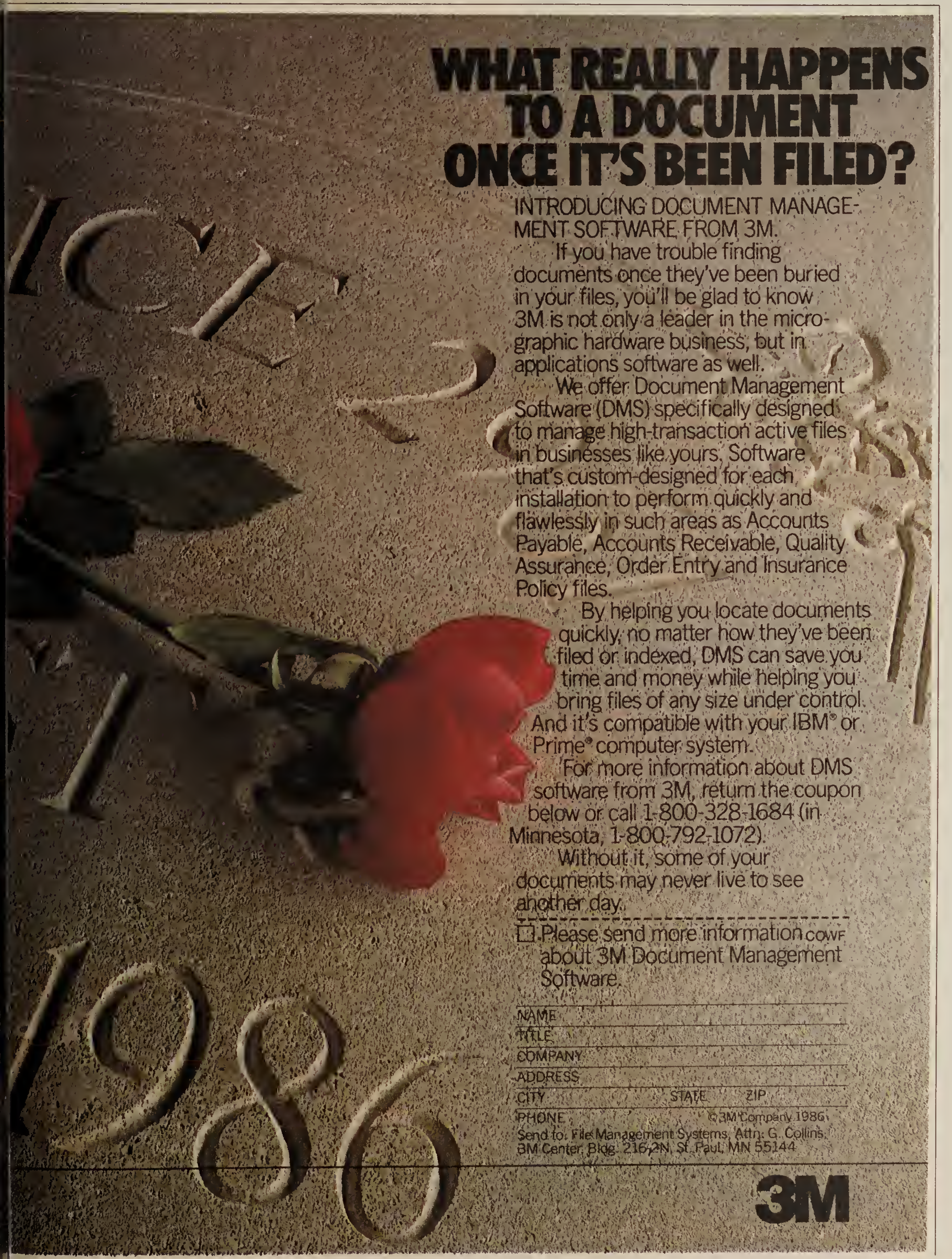
Consider the following scenario: Bill, the executive vice-president, sees Joe, the training manager, in the hallway.

"Hi, Joe," Bill says. "How are things going down there in training?"

"Well, Bill . . ." Joe hesitates. "We're having a hard time getting our new MVS/XA system gen'd in order to run our training workshops. I think one of the system buffer parameters is screwed up and asking for too much resident memory."

Did Bill walk away from Joe with a

Continued on page 76



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Start spreadin' the news

It doesn't take much for training to get its name out there and tell the corporate community it is alive. The very business of training involves exposure to large numbers of people, and this should be used as an asset for making training visible.

Some ideas to this end include the following:

Newsletter. A newsletter provides ongoing communication with those on the distribution list, implying that an active training department is at work. The list can include past students, company management and anyone who has expressed an interest in receiving information on MIS training.

Include some of these items in your newsletter:

- Additions and deletions to the training schedule.
- Short descriptions of new training products that you are considering.
- Solicitation of support from personnel for special projects.
- Technical publication extracts that may be useful to personnel in need of state-of-the-art data.
- Schedules of outside courses that would fulfill specific training requirements outside the scope of MIS training.
- Recognition of company personnel who may have given training support in delivering classes.
- Testimonials of past students who have taken classes coming up in your schedule.

Course catalog. I highly recommend that you spend a few extra dollars to produce a professional-looking course catalog. Many people will be looking at this, and it will represent your training department. An dull catalog implies dull classes. This may not be true, but the perception will be there, and people act on perceptions, not reality. A unique front cover, multiple colors, crisp lines and print and unposed pictures of students attending your classes will help.

Skill-sharing. Effective trainers possess an invaluable skill — the ability to communicate in front of a large group of people. But not everyone can do this. Many people in an organization avoid this form of communication, even though it might be the most effective.

The MIS training department could possibly offer an informal class to internal personnel on how to be effective in group presentations; after all, this is what training does most of the time. Tips and techniques on areas such as overcoming the fear of being in front of a group, organizing ideas and presentation skills could help corporate personnel who would not normally come in contact with MIS training. This kind of exposure could give training positive visibility.

BERNIE NACHSHEN

Value

FROM PAGE 75

warm, comfortable feeling about the value of the training department and how it was contributing to the success of the corporation's business objectives? The next time budget cutting comes around, do you think Bill is going to remember the significance of system buffer parameters?

It happens — a key opportunity is thrown away on a technical point. Let's consider some alternative answers Joe might have given:

— "To train some key people, we're putting some major programs in place that we figure will save the company about $300,000 in the next two years."

— "We're setting up some programs to train the system programmers to take full advantage of and optimize the use of our new MIS system, which was a significant investment."

— "We're looking at putting together a public offering of some of our courses for a fee. We think there's some money to be made, and we don't think it will require any additional expense for the company."

Bill will remember these answers. They illustrate that a cut in training may result in a cut in future revenue and corporate savings.

Drumming up business

One situation training management must avoid is isolation from the rest of the company. Training should not be seen as something separate and independent from other company departments. It must be seen as an integral function delivering critical services that these departments need.

For example, marketing personnel may need a technical overview of software systems to be more effective in communicating with customers. Recognizing this, MIS training management could invite them to the first day of class, in which a system overview is usually presented. This is an excellent opportunity for the training department to show its value with little extra effort required.

Engineering or manufacturing may maintain their own mainframe systems, requiring the development of specific technical skills to support those systems. MIS classes could possibly be leveraged to develop those skills, with these departments picking up part of the training costs. This could be called drumming up outside business.

THE TRAINING department can be proactive in discovering corporate needs and showing how it can contribute to the success of other departments.

The point is that the training department can be proactive in discovering corporate needs and showing how it can contribute to the success of other departments. Showing up at staff meetings held by user departments, for example, reflects training's interest in and commitment to understanding how it can participate in meeting those departments' goals.

Stop guessing

Running "lean and mean" seems to be the name of the game these days. Nowadays, departments are required to make clear-cut business decisions that justify expenditures and use of company resources.

The MIS training department must be a part of this business approach. With quantifiable and measurable objectives, training can show how it contributes to the financial success of its company. By removing a large part of the guesswork normally associated with the value of training, training managers can get the funding and resources required to do their job.

As the saying goes, "If you think education is expensive, try ignorance." A corollary of this is, "MIS training may be costly, but consider the cost of ignoring its value." It is time for training managers to come out of the closet and start aggressively promoting, in business terms, their invaluable service. •

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Tailoring end-user training to solve end-user problems

BY JOHN SILVESTRI

Someone has to say it: A lot is expected of corporate users of DP technologies. Computers are in their laps; terminals are all around them. Programmers and analysts are tugging at users' sleeves trying to get "more involvement" on the "mainframe development effort" under way.

Sure, all of these tools and projects are focused on solving the user's business information needs. Sure, the user is king today — isn't that great? Sure, it's true that if users asked for nothing and just didn't worry about tomorrow so much, they would be relieved of a lot of "extra work."

But, alas, times have changed. The user manager or staff member is no longer supposed to be content with the status quo.

The brave new world

Not too long ago, keeping everything more or less the way it was yesterday was a major management objective. Maybe the stockholders wanted to see growth, but did the average Joe or Jane on staff? Just react to your environment as required and find true happiness — and security. Don't rock the boat with ideas for productivity increases or operational improvements. Ah, the good old days.

What's different today? If you are a status-quo user, you are severely out of step. You are a vestige of the musty past. There is too much room for improvement in business operations, in customer service and in the kinds of reporting that managers use to make important business decisions. There is money to be saved and money to be made. New products and services are waiting for the proper analysis techniques to be discovered so those new ideas can be marketed successfully.

"Proactive" is the watchword today. Look for opportunities. Take the initiative. Anticipate, project, research, recommend, do . . . . These are hardly the attitudes of a reactive manager. Sure, your primary responsibility is in accounting, sales or production. But you need to find the time somehow to make yourself and your operation more efficient, cost-effective, profitable, leading-edge, tomorrow-oriented and state-of-the-art.

All of this may not be written into your job description, but it's all part of your job — not a side order but the entree. It's what I call the "user analyst" personality: keeping a wide eye on tomorrow while taking care of business today.

Computers can't do it all

Some of this great stuff can be achieved without any, or at least any new, information systems. Want to sell more hairbrushes? Then knock on more doors. You don't need elaborate information systems to figure that out.

However, information system configurations, if they are as sophisticated as the problems they are supposed to solve, most often go a long way in aiding us to be that leading-edge operation we want to be. That's where all the micros and mainframe systems come from — the need to do things better, faster, cheaper, to survive first and profit and prosper later.

So what's the problem, then? It's that users have not been trained for their new role. They have been thrust into a dynamic environment that is obviously good for business and business managers, but nobody ever took the time to discuss how the efficiency, expense savings, operational improvements and so on were to be attached. We are allowing people to operate by the seat of their pants.

> TRAINING is the missing link between the users' needs and the solutions to those needs. It is the notion that the game isn't over when we have identified the problem and have come up with a workable solution.

Sure, the right approaches will be taken sometimes, and good decisions will occasionally be made. However, consistently good decisions and appropriate actions require something more.

Not just skin deep

We need to concern ourselves with two levels. The first involves the learned skill of thinking about information needs in a formalized, structured, classical problem identification/problem definition manner. Coupled with identifying and defining the problem, a stage often skipped, is developing problem-solving thinking patterns. The competent, experienced systems analyst, for example, thinks in the problem-solving mode automatically.

The important thing to note is that the whole area of problem identification, definition and solution is one that lends itself to training. Users need training to handle the systems-development approach effectively — whether that ultimate system be customized or packaged software, micro-based or mainframe-based.

Problem solving in the information-needs sphere should not be confused with general business problem solving. The latter comes naturally to many people. The former is tougher to master or even become minimally proficient at.

The second level involves learning how to use the solutions that disciplined thought indicates is appropriate for the given information needs. Despite the proliferation of information centers, user communities are often left to fend for themselves. That fending could cost the organization dearly in lost production, lost time and, worst of all, bad decisions.

Almost there

Once the tools for both levels are discovered and the solutions worked out, users need to be exposed to a rapid means of making those tools usable. On both levels, the answer ultimately is training: taking a day or two to ensure that dozens of days are not wasted; spending a smaller amount to ensure that much larger amounts are not lost.

Training is the missing link between the users' needs and the solutions to those needs. It is the notion that the game isn't over when we have identified the problem (or the opportunity) and have come up with a solution that seems workable. There is a need to learn enough so we can work that solution into our set of business problems or requirements.

Much is expected of users: Management expects a lot, and users expect a lot from themselves. When we fill the skill gaps in problem identification and definition, problem solving and use of available tools, we will justifiably look forward to all the benefits that the "new user," the user analyst, can bring to business. •

Silvestri is president of J. C. Silvestri Associates, Ltd., a data processing consulting and user training firm in Addison, Ill.

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MANAGEMENT

TAKING CHARGE

Douglas Rahn

Projects need 'right stuff'

Imagine that your boss walks up to you and offers you an assignment as project manager directing the development of an important new data processing system. Would you accept the job?

It's a difficult offer to refuse. Developing a computer system is new and exciting. As project manager, you would have substantial authority and control. Such an assignment could be a big step up for your career. It can also be a great ego-boost. Why, sure, go for it!

But wait a minute. Before you make a decision, consider these 10 attributes of project management to see if the job is for you. Judge whether you — or someone else you are considering to manage a project — has "the right stuff."

Choose yes or no to each question below. There is only one requirement: answer honestly.

Are you willing to take the risk? Data processing projects are high-risk ventures for both the company and the manager. Many projects have failed. When you accept a project management assignment, you are betting your job on the success of the project.

If you think you're willing to

Continued on page 80

Controlling the leading edge

While the continuing evolution of computer technology offers countless opportunities for organizations to enhance their efficiency and extend their reach, it also greatly compounds the challenges of auditing, controlling and maintaining the security of systems.

Such concerns were much in evidence during The EDP Auditors Foundation's 17th Conference on Computer Audit, Control and Security held recently in Boston.

Efrem Mallach

Computerworld Senior Editor David Ludlum interviewed Efrem Mallach, associate professor of computer science at Boston College School of Management, on the topic of a conference held by Mallach — "Management Implications of Emerging Technologies."

What new technologies should be of most concern to managers with regard to audit, control and security?

This isn't an exhaustive list, but they include artificial intelligence, intelligent microcomputer access to central data bases and departmental systems.

What sorts of concerns

Continued on page 81

Overall computing intensity

Information systems spending as a percent of revenue, including spending outside MIS organizations

Industry	*Spending as Percent of Revenue*
Banking	4.9
Retail/Sales	3.2
Insurance (premium income)	2.4
Health care and pharmaceuticals	2.2
Metal and metal products	1.9
Consumer products	1.9
Electronics	1.6
Public utilities	1.6
Chemicals	1.5

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MIS shares influence

End users control growing share of system budgets

BY DAVID A. LUDLUM
CW STAFF

NEW YORK — A significant portion of company spending on information systems is coming outside the budget of MIS organizations, raising questions of control and the MIS department's role, according to a recent study.

Among approximately 100 companies with MIS budgets of $10 million or more, roughly one-third of spending for information systems falls outside MIS groups, according to the Diebold Group, Inc., which reported the results of its study last week.

"While these numbers may show essentially no growth in MIS budgets and employees, there really is a lot of growth in MIS activity among companies, and that growth is coming in end-user organizations," said Gary Venner, director of the Diebold Research Programs.

Company spending on information systems outside MIS averages 57% of the MIS organization's spending among a group of industrial firms and 50% among service, trade and utility companies. The figure ranges from 10% in the electronics industry to 118% among retailers.

More than 80% of the companies reported information systems expenditures or personnel outside MIS, up from 50% in another study done by the consulting firm in 1979. The new study

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Food chain checks out pricing aid

BY DAVID A. LUDLUM
CW STAFF

CARROLTON, Texas — Exploring an application of computer technology in the front line of its operations, the Kroger Co. is testing a system that links electronic displays of grocery prices on supermarket shelves with the prices in the store's check-out scanner system, helping assure consistency of the prices.

The personal computer-based system, installed in parts of a Kroger supermarket here, employs LCDs on the shelves that are linked to the scanner system by radio signals.

The system is the first of its kind to be tested in the U.S., according to the vendor, Telepanel, Inc. in Markam, Ontario, Canada.

The Toronto-based Loblaw's supermarket chain, owned by Loblaw Companies Ltd., also has tested the Telepanel system in part of one store and decided to expand that test to the full store, according to John Heaven, who is Telepanel's director of finance.

Steve Holland, a spokesman for the Kroger Co., which is based in Cincinnati, emphasizes that the company is approaching the product cautiously and will expand the test gradually if satisfied with the results.

"We haven't made any com-

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BOOK REVIEWS

Managing fear and loathing among end users

BY DAVID A. LUDLUM
CW STAFF

Computers on the Job: Managing the Human Side
By C. Patrick Fleenor and Robert E. Callahan

It is often said that in an MIS organization, the workers are the biggest expense — and the most valuable resource. If that is true in an MIS shop, where personnel expenses might account for 40% or so of the budget, workers are far more likely to overshadow computer hardware in importance within end-user organizations.

That principle underlies the significance of books like *Computers on the Job: Managing the Human Side.* While some of the book is relevant to computer managers, the perspective is most useful to nontechnical managers in end-user organizations who must assure smooth adjustment to and routine use of computers. But perhaps because its focus is on the rank and file of end users, the book might be worth the consideration of information systems managers, who may not always get sufficient exposure to this realm.

Much of the ground covered is familiar, such as stress, ergonomics, the implications of electronic mail and resistance to new technologies. The authors, consultants and members of the faculty of Seattle University's Albers School of Business, accept the conclusions of the predominance of studies that find using computers does not pose acute health hazards but take seriously the ergonomic factors and other aspects of computer work that can contribute to stress.

Several parts of the book are fresher, however, such as a discussion of the impact of computers on managerial decision making and, in particular, on their use to monitor fellow employees, whether data-entry clerks or middle managers.

In discussing such monitoring or "leadership by remote contol," the authors consider both benefits and drawbacks of systems that, for example, measure data-entry workers' key strokes per hour and breaks. Based on comments from workers, managers and observers, the authors cite potential gains in establishing objective standards for judging workers but, without fanfare, warn of the dangers of "computer bureaucracy," where workers get feedback via computer printouts rather than face to face.

Perhaps of greater interest to information systems directors is an accompanying look at top managers' use of computers to get at data that they previously saw only after it had been compiled, and perhaps distorted, by subordinates. This raises questions of the appropriate functions of upper managers and the degree of leeway they should accord their subordinates.

The authors avoid intruding on the wealth of anecdotal material they provide, material that lends the book a concreteness and, in keeping with the theme, a feeling for the individuals involved. They also display a smooth prose style. "In more successful organizations," they write, "managers communicate a vision of where the organization or department is going. The vision needs to be reinforced for the employees to feel some ownership of the vision and commitment to its accomplishment. Employees need to see the excitement and enthusiasm of the leader."

Fleenor and Callahan also provide an abundance of practical suggestions, including reference sources, tips for self-as-

Continued on page 84

Projects

CONTINUED FROM PAGE 79

make that bet, you at least understand the risk. Are you willing to take it?

Are you willing to commit the time? Project management is a full-time job. You probably already know that. But project management is the kind of job that follows you home in your briefcase after the regular eight-hour day. It keeps you company when you wake up at night. You will eat and shower with the project. Are you ready for that kind of companionship? Are you prepared to commit the time?

Can you handle stress well? Project management is a tremendous responsibility and is difficult to do well. The challenge can be wonderful, but a high level of stress goes with the job, and constant stress can be deadly. Literally. Handling stress doesn't mean looking cool on the outside. The question is how well you handle stress on the inside. Do you handle stress well?

Do you enjoy people management? Which do you like better: working with people or just doing good work? If you enjoy doing good work more than working with people, you may not be a good candidate for project manager. As project manager, people are your first responsibility. Almost no day goes by without the effective project manager thinking about people, how to motivate them, get their cooperation and better utilize their skills. The title of "people manager" may be more accurate than "project manager" for this job. Do you see yourself as a good "people manager?"

Do you enjoy problem management? A project manager will spend much of his day hearing about problems or trying to find out what the problems are. Often, problems are not on the surface. The project manager will have to take action to solve the problem. That usually does *not* mean actually fixing the problem — the project manager is denied that satisfaction. Instead, you will identify the steps needed, appoint people to do the fixing and then go on to the next problem. Will you like hearing about problems all day long?

Can you handle the politics? Politics will inevitably be a factor in large projects. Both the project and the company might be better off without politics getting into the picture, but that doesn't seem to happen. Do you see and understand the political maneuvers in the office? Can you deal with them? Will you enjoy doing it?

Do you have the right emotional disposition? Do you remain calm and reasonable when others have lost their tempers? As project manager, you may see others get angry and lose their composure, but you cannot do so. The reason is simple: project managers cannot allow themselves to lose control. Emotional, reactive types will not do well as project managers because they tend to get bosses, coworkers and staff members upset. That, in turn, gets in the way of productivity and the quality of work. Do you have the logical, mature disposition needed for the job?

Do you have project management skills? Many project managers have a technical data processing background, although it's not necessary. But while they need to understand the concepts behind technical issues, they are not primarily technicians. Project management techniques are substantially different from the skills needed to be a good programmer or analyst. It's wrong to think that someone will be a good project manager because he has excellent technical data processing skills. Do you understand project management techniques?

Do you have good communication skills? Communications skills are helpful in most jobs, but good communications skills are essential for the project manager. He needs to have good communications with company managers to understand management's goals, which can and do change. The project manager has to clearly pass these on to team members. The project manager has to keep all affected parties informed of plans and changes. The project manager should be a good listener and a good salesman. Do you consider communications skills — both written and verbal — one of your strengths?

Can you deal with human nature? The installed computer system will never be as good as people had dreamed. This is because the system as proposed had all the hype needed to get it going, while the installed system is inevitably a compromise between costs and benefits. Even if you didn't make the hard decisions, people will point out that *you* didn't achieve all their goals. In addition, people will remember your mistakes longer than they remember your miracles.

Add up your score. Did you answer "no" to five or more questions? If so, forget about project management for now. You're not made for it, and it's not for you.

Did you answer "no" to two, three or four questions? You may survive as a project manager, but you probably won't like it. Simply put: You won't be happy. Plus, you probably won't score an excellent grade at the job, even if you do survive.

If you answered "yes" to all questions or answered "no" to only one, good for you! You qualify as a very hard-to-find person. In fact, you may be one person in 100 in the profession, or rarer than that.

Rahn is a supervisor of system development at Washington Natural Gas Co. in Seattle.

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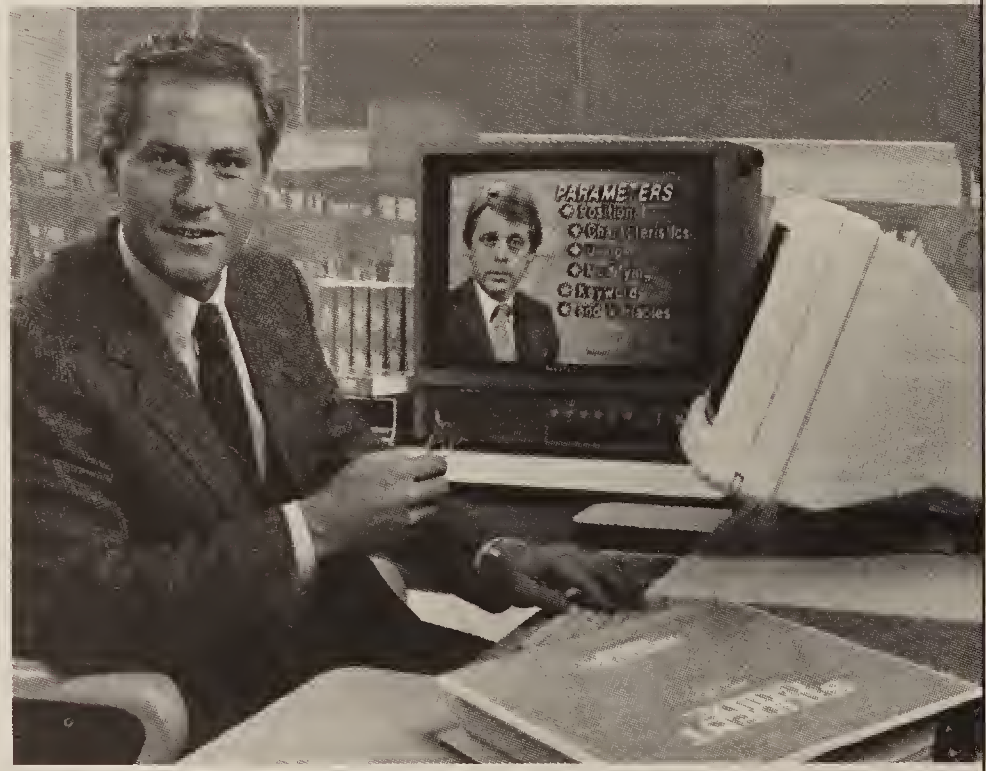

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Controlling

FROM PAGE 79

should be addressed with regard to AI?
The difference between artificial intelligence and traditional programs to accomplish similar objectives is twofold. One is that the control over what the program does is really no longer in the program itself. It's in the knowledge base. . . . The second and related difference is that you can't simply follow through the logic of the program to figure out what it's going to do. A very small change in the situation can cause a dramatic change in the rules. . . . I'm specifically focusing on expert systems — a miniscule difference in the facts that apply to a situation can create an enormous difference in the rules that end up being invoked to reach a conclusion.

What can managers do to control that danger?
There are two steps that managers have to follow to cope with any new technology. The first is to understand enough of the technology to understand what the dangers are. . . . The second thing a manager has to do is to put people and procedures into place to deal with those dangers. This doesn't mean that every MIS vice-president has to become a guru on the internals of expert systems. This means that they have to put someone on the staff who does understand the internals at a reasonably technical level and can establish the detailed controls and policies that are needed to protect against misuse of the new technology.

And misuse includes honest errors on the part of well-intentioned people. Misuse of new technology is probably a more serious risk than potential abuse of new technology because if you have a new technology, first, the people who want to use it properly don't yet know how, and second, the crooks who want to penetrate may not yet know how either, at least not in a large volume.

What about intelligent micro access to data bases?
Here, you're separating the function of getting into the data base into two pieces, and no one system has visibility to the entire request and its fulfillment. So controlling the technology to make sure that it serves the corporate objectives is something that has to be done with visibility to two systems and their interactions. Information about what's in the data base, for instance, is likely to be scattered over multiple systems.

And here, trying to make sure that the entire package is in sync with organizational needs requires looking at pieces that didn't have to be looked at until now and looking at interactions among the pieces that didn't exist until now. So again, someone in management has to be aware that these interactions and these pieces exist and has to make sure that people who understand them are in place — it's an expertise that the MIS shop didn't need until the new technologies showed up — and has to make sure that these people can set up the right policies.

What about departmental systems?
The issue with the departmental system is that you're combining the potential for damage of a large multiuser system with, in many cases, the lack of control of a personal computer.

The intent in many cases is to provide a tool that many individual departments can customize to their own needs without having to go to a central programming staff and get involved in the process of justification and definition and requirements analysis and so on.

The danger is that these processes have their value. These processes provide a measure of control. These processes provide a measure of protection against people going off half-cocked without knowing what they're doing.

Once the department manager appreciates the problems, there's very often a ready-made solution that does not involve hiring technical experts, which is to recognize that there are technical experts in the MIS organization, to call them in and to pay attention to what they say, even at the expense of a little ease-of-use convenience.

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MIS shares

FROM PAGE 79

was conducted last year.

"We think it's going to continue and, in a couple of years, it will get to the point where there's more going on outside the MIS budget," Venner said.

That raises two chief issues, he explained. One is that many companies do not know how much they are spending on information systems.

"You can't go to the general ledger and see MIS activities from the various departments rolled up into one number," Venner said.

The other issue is whether MIS groups will increasingly facilitate or consult on activities of end-user organizations.

They already are moving in that direction, Venner said, but all the implications of the shift are not clear.

No industry appears as a clear leader in the decentralization of information systems activity, he added.

Although the study found retailers have the greatest portion of spending outside MIS organizations — more than half the total — the figure might be discounted because it reflects point-of-sale systems, Venner commented.

Diebold also assessed the number of employees working with information systems outside the MIS departments, which ranges from 12% of the MIS staff in insurance firms to 76% in a sector that includes the automobile industry.

The amount of spending for computer hardware outside MIS ranges from 23% of the MIS organizations' hardware spending among banking firms to 105% among oil and petrochemical concerns.

Using the findings, Diebold calculated companies' total expenditures on information systems as portions of their total revenue to determine the "overall computing intensity" of industries.

Banking most intensive

The firm found banking the most computer-intensive field, with total information systems spending coming to 4.9% of total revenue. That field is followed by retailing at 3.2% and insurance at 2.4%.

Next come manufacturers of pharmaceuticals and other health-care products at 2.2%, making theirs the most computer-intensive industrial sector, according to the study.

Tied for fifth place at 1.9% are manufacturers of consumer products and of metals and metal products.

The number of MIS employees ranges from 1% of the total work force among food and beverage manufacturers to 9% among insurance firms.

Food chain

FROM PAGE 79

mitment with Telepanel. It's a baby step," Holland says. The test, which began March 13, involves about 1,200 price displays, while equipping the entire store would require about 8,000 displays.

The chief goal is to keep prices in the store's scanner system consistent with those on the shelves, Holland says. "If you change the price you better have it right at the front counter when [customers] check out," he says.

Kroger officials are withholding comment on the system until they have been able to assess it, Holland says. "We try not to say anything until we have some kind of results," he adds.

Telepanel expects the system to cost roughly $112,500 to $150,000 for an average supermarket, Heaven says.

It runs on an IBM Personal Computer XT, AT or compatible — consuming about 10% of its processing power while operating — and is compatible with scanner systems from IBM, NCR Corp. and Datachecker/DTS Corp., says Chris Skillen, Telepanel's vice-president of sales and marketing. The software is written in the C language so it is compatible with any Unix system, he says.

The system, called Telepanel Price and Information Network, can also display the unit price for customers and the reorder quantity for store workers with the push of a button on a display, Skillen says.

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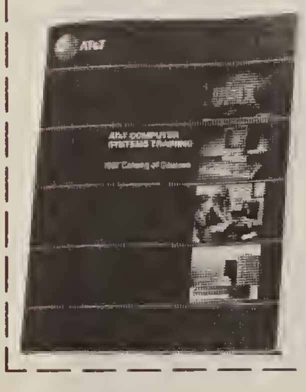

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Fear, loathing

CONTINUED FROM PAGE 79

sessment, guidelines for managers and even a few stretching exercises for reducing stress.

Perhaps the book's greatest strength, however, is its dispassionate tone. A recurring theme is the potential of computer technology to enhance or inhibit performance by reinforcing either good or bad management practices.

Paperback, $15.95, 178 pages, ISBN 394-55320-9, by Random House, Inc., New York, N.Y.

BOOKS IN BRIEF

By George Harrar

The Software Catalog: Microcomputers
By Elsevier Science Publishing Co.
A three-volume set, now in its fifth year, describing 22,850 micro programs from 4,098 vendors, produced from an international data base called ".Menu."

Paperback, $135, 2,880 pages, ISBN 0-444-01154-4, by Elsevier Science Publishing Co., New York, N.Y.

Computer-Integrated Manufacturing Handbook
Edited by Eric Teicholz and Joel Orr
How to understand and implement computer-integrated manufacturing, the "unrealized dream" of the factory — that "seething caldron of emotion, perspiration, nobility, foolishness, greed, sincerity, selfishness. . . and generosity."

Hardcover, $59.95, 466 pages, ISBN 0-07-047774-4, by McGraw-Hill Book Co., New York, N.Y.

Unix Products Directory 1987
By /usr/group
Here are listed 826 Unix-specific vendors, 3,164 products and services, 1,587 software application packages, 104 publications and 72 vendors of education services and training materials.

Paperback, $50, 567 pages, ISBN 0-936593-02-4, by /usr/group, Santa Clara, Calif.

Software Quality Assurance and Management
By Michael Evans and John Marciniak
Planning, scheduling, implementing, executing and controlling software development — solutions for software engineers and managers.

Hardcover, $37.95, 327 pages, ISBN 0471-80930-6, by John Wiley & Sons, Inc., New York, N.Y.

The Professional User's Guide to Acquiring Software
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COMPUTER INDUSTRY

INDUSTRY INSIGHT

Alan Alper

Edwardian age passes

When it was learned recently that James Edwards, AT&T's one-time Computer Systems Division honcho, had quietly left the communications giant, few observers were surprised.

The handwriting had been on the wall since October 1986, when Vittorio Cassoni, an Olivetti Management of America Corp. executive, replaced Edwards at the helm of the renamed Data Systems Division. Edwards was shifted to a staff post with responsibility for "future delivery systems," an AT&T euphemism for how it plans to sell, service and support its products under its so-called data networking strategy.

Edwards had led the firm in charging enthusiastically into the computer industry wars after the breakup of the Bell system in 1984. Industry gurus at the time envisioned a battle of the titans between AT&T and computer industry leader IBM.

While there have been some skirmishes, AT&T has yet to battle with IBM. It has, however, suffered from self-inflicted wounds, the result of a confused strategy, which have been fostered by years of operating as a monopoly.

During Edwards' reign, AT&T chalked up heavy losses — $1 billion in 1986 alone, according to analysts. Certainly AT&T knew it would lose money in its initial assault on the market, but few analysts expected that much red ink.

One man cannot be blamed for AT&T's computer industry woes. There is enough blame to fill AT&T's large corporate headquarters in New York. Edwards had the daunting task of just getting AT&T ready to compete, considering the caliber of talent it was up against.

Edwards joined AT&T in 1983 after a successful 15-year career with IBM and short stints with Xerox Corp. and an outfit called the Instrument Group. Like other executives who joined AT&T from outside

Continued on page 90

U.S. chip industry hails tariffs

BY ALAN J. RYAN
CW STAFF

Semiconductor industry officials in the U.S. say they are pleased with President Reagan's recent decision to impose stiff tariffs on some of Japan's exported electronic products because Japan has failed to honor the semiconductor trade accord inked in July 1986.

But industry watchers say it is unlikely that the sanctions will last long. The Japanese have stepped up efforts to comply with the accord, and U.S. chip prices have already begun to rise as customers, fearing a shortage in the chip market, have been making longer term contracts for the chips than they had in the past, driving up prices.

Juan Benetiz, president of semiconductor manufacturer Micron Technology, Inc. in Boise, Idaho, says the 100% tariff "is a step in the right direction. At least we're starting to get the message loud and clear to the Japanese that we are not going to sit idle while they are raping our market."

"Our objective is to see that this trade agreement between the U.S. and Japan is fully implemented and working, and if it takes sanctions to make it do so, so be it," says Gray Allen, a spokesman for National Semiconductor Corp.

In the original agreement, Japan said it would allow U.S. chip manufacturers to expand their market share there from 8.5% to more than 20% by 1991.

Japan imports down

Progress toward that target has not occurred, however. According to a recent Japanese Ministry of Finance (MOF) report, Japan's imports of U.S. chips in February were down 11% from the previous month and down 13% from the same month last year. According to the MOF, the import figure was the lowest since the spring of 1985's worldwide chip slump.

Meanwhile, Japan's February shipments of integrated circuits to the U.S. jumped 38% from the January figure to record levels. Compared with the corresponding period last year, the February figure rose 5%.

"Japanese chip production went up 51% from December 1985 to July 1986, which was a major problem," says analyst Michael Gumport of Drexel Burnham Lambert, Inc. However, "even before these tariffs were put on, the good news was that Japanese chip production dropped about 20% from July to January."

Additionally, in late March, Japan's Ministry of International Trade and Industry ordered large chip makers in Japan to cut production by 11% in the coming quarter. If followed, the reduction is expected to help eliminate some of the dumping of chips to other countries below cost, a practice that infuriates the U.S. and is in defiance of the trade accord.

But the sanctions could be lifted before they are scheduled to begin on April 17 if Japan acts quickly to comply with the accord.

A spokeswoman for Intel Corp. in Santa Clara, Calif., says her company supports the tariffs "because we've seen continued noncompliance with the agreement that the Japanese signed."

"This is a means of getting

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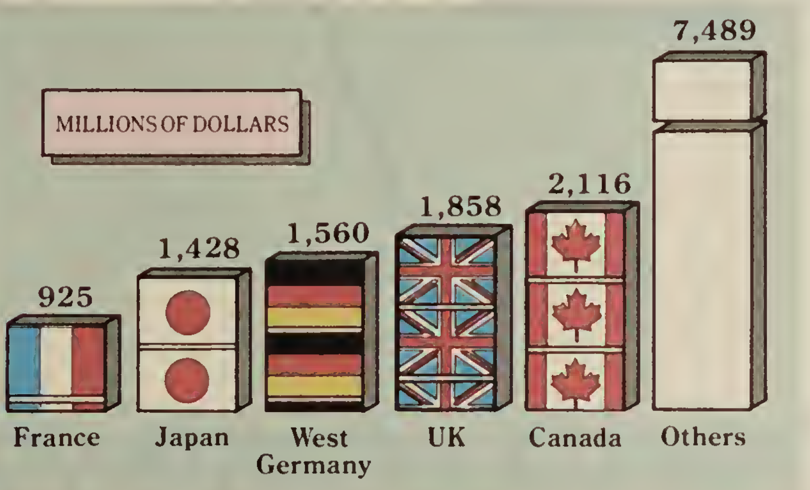
Data View

Computer exports, 1986

Dollar value of U.S. computers and related equipment sold overseas



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BBN buys Network Switching

BY ALAN J. RYAN
CW STAFF

CAMBRIDGE, Mass. — Bolt Beranek and Newman, Inc. (BBN) announced last week it has exercised an option to acquire Network Switching Systems, Inc. (NSS) in Andover, Mass., for $18 million.

The deal, which would provide subsidiary BBN Communications Corp. with the technology to broaden its product line to include products serving the private voice-network market, is expected to be cemented in the firm's fourth quarter. The pact would also aid in BBN's planned development of a switch that integrates packet- and circuit-switching technology. NSS is a development-stage company and has had no product sales to date. It had an accumulated deficit of $12.5 million through Dec. 31, 1986, BBN said.

If the acquisition is completed, the purchase price would be allocated to the in-process research and development projects of NSS. Accordingly, $18 million, or $2.06 per share, would be charged to BBN's earnings.

Inside

- IBM Japan posts first profit drop ever. Page 88.
- Microsoft files the first of what may be a long line of MS-DOS infringement suits against Taiwan micro makers. Page 90.

Paul Rizzo, last of the old guard, will retire from IBM

BY CLINTON WILDER
CW STAFF

ARMONK, N.Y. — In what observers called the end of the old guard, IBM announced last week that Vice-Chairman Paul J. Rizzo will retire later this year.

In addition, two senior vice-presidents — IBM Europe President Kaspar V. Cassani and Jack D. Kuehler, considered one of the company's top technical executives — were named executive vice-presidents, a title not used by IBM since the early 1970s.

Cassani and Kuehler thus became two of the leading candidates for the position of IBM president if, and when, Chairman and Chief Executive Officer John F. Akers chooses to relinquish that title.

Keeps seat on board

IBM said Rizzo, 59, will remain at least temporarily on the IBM board of directors when he leaves the daily operation. He will become dean of the University of North Carolina's Graduate School of Business, the firm added.

Rizzo's retirement will mark the end of the senior management team put together by Akers' predecessor, John R. Opel, according to consultants who follow the company.

IBM's Rizzo

Several other key executives, including Senior Vice-Presidents George B. Beitzel and Dean P. Phypers and seven vice-presidents, had previously announced that they will retire this year.

"Since 1985, the 36 U.S.-based senior executives have all been promoted, demoted, transferred or retired," said Brian Jeffery, chief of research at International Technology Group in Palo Alto, Calif.

"Akers has turned over the entire top management, and the corporate management board will now be all Akers' men," he added.

Jeffery noted that the Opel team espoused the concepts of independent business units and acquisitions, such as the complete buyout of Rolm Corp. and the purchase of equity interest in

Continued on page 88

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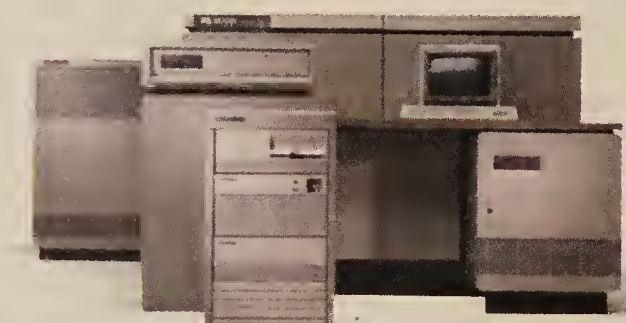

HP 3000 family: Micro 3000 XE, Series 52, 58, 70, 930 and, not shown, Micro 3000 and Series 950.

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Rizzo

CONTINUED FROM PAGE 85

Intel Corp. and MCI Communications Corp.

But within the past year, IBM has generally centralized operations to exert more corporate control over them. It has also assumed closer control of Rolm's 6,000-member sales force, sold some of its stake in Intel and seen little tangible benefit from its partnership with loss-plagued MCI.

Systems strategies to blame

"Virtually every tenet of the Opel strategy has gone away," Jeffery said.

Robert T. Fertig, president of consulting firm Enterprise Information Systems in Greenwich, Conn., said the corporate systems strategies formulated by the previous generation of management are partially responsible for IBM's current financial doldrums.

"Rizzo and some of the others have made some major blunders along the way, such as many incompatible product lines and failed products like the 8100," Fertig said. "IBM is finally focusing on three architectures, but why did it take them 10 years to come up with that conclusion? I think some of the old-timers have been responsible for that state of affairs," he added.

Rizzo, a 29-year IBM veteran, has moved up through the ranks after starting as an analyst. He became vice-president of finance and planning in 1970, senior vice-president in 1974 and vice-chairman in 1983.

Up for re-election

Rizzo is up for re-election to the board of directors at IBM's annual meeting, which will be held three weeks from now in New Orleans.

In addition to Cassani and Kuehler, Senior Vice-President and Group Executive George H. Conrades is widely viewed as a rising candidate for the presidency.

International Technology Group's Jeffery said Conrades is scheduled to make a major presentation at an IBM consultants' meeting later this month, a traditional rite of passage for rising Big Blue executives.

First profit fall for IBM Japan

TOKYO — For the first time in its 50-year history, IBM Japan Ltd. announced last week a yearly drop in profits for fiscal 1986, which ended in December.

The company's profits dropped 12% to $819 million. Sales fell 4% to $6.06 billion. Until 1985, the Japanese subsidiary of the U.S. giant had sustained a two-digit revenue growth rate for five consecutive years.

IBM Japan President Tekeo Shiina attributed the firm's poor financial performance to sharp declines in orders placed by leading manufacturing companies, which account for some 40% of IBM Japan sales.

Yasuko Yoshimi, a correspondent for the Asian bureau of the CW Communications International News Service, contributed this report.

U.S. chip

CONTINUED FROM PAGE 85

them to comply. If it achieves its objective, then the sanctions can be suspended," she adds.

Micron Technology's Benetiz says he was disappointed that semiconductors were not included in the list of $300 million worth of Japanese imports to which the tariffs would apply. That list includes items that either contain chips or are made by chip manufacturers. Such items include television sets, hard disk drives, computer display terminals, air conditioners, power hand tools, refrigerators and other items. "If the unfair trade practices deal with semiconductors, why not address that directly?" Benetiz asks.

The government said it chose not to add the tariff to the chips because it does not want to strain U.S. businesses that use the chips in other products.

Mixed feelings

Stock analysts say their feelings on the tariffs are mixed. "I don't think protective legislation is usually advantageous," says E. Lawrence Hickey of First Analysis Corp. in Chicago, adding that as component prices increase, system prices for computer equipment will also rise. "At the same time, I realize that the Japanese have been predatory in their pricing, and the U.S. has to show some backbone to countermand their efforts," he says.

"I like to believe at heart I'm a free trader," Drexel Burnham's Gumport says. "Yet, I see the Japanese selling their chips well below the cost of production, and I wonder if free trade is always the right answer."

Analyst John Girton, vice-president of Birr, Wilson Group, Inc. in San Francisco, says the tariff will affect a small fraction of the overall trade deficit with Japan and, therefore, "perhaps this is just a tool to sort of set the stage for bargaining, which will eventually assist our semiconductor industry."

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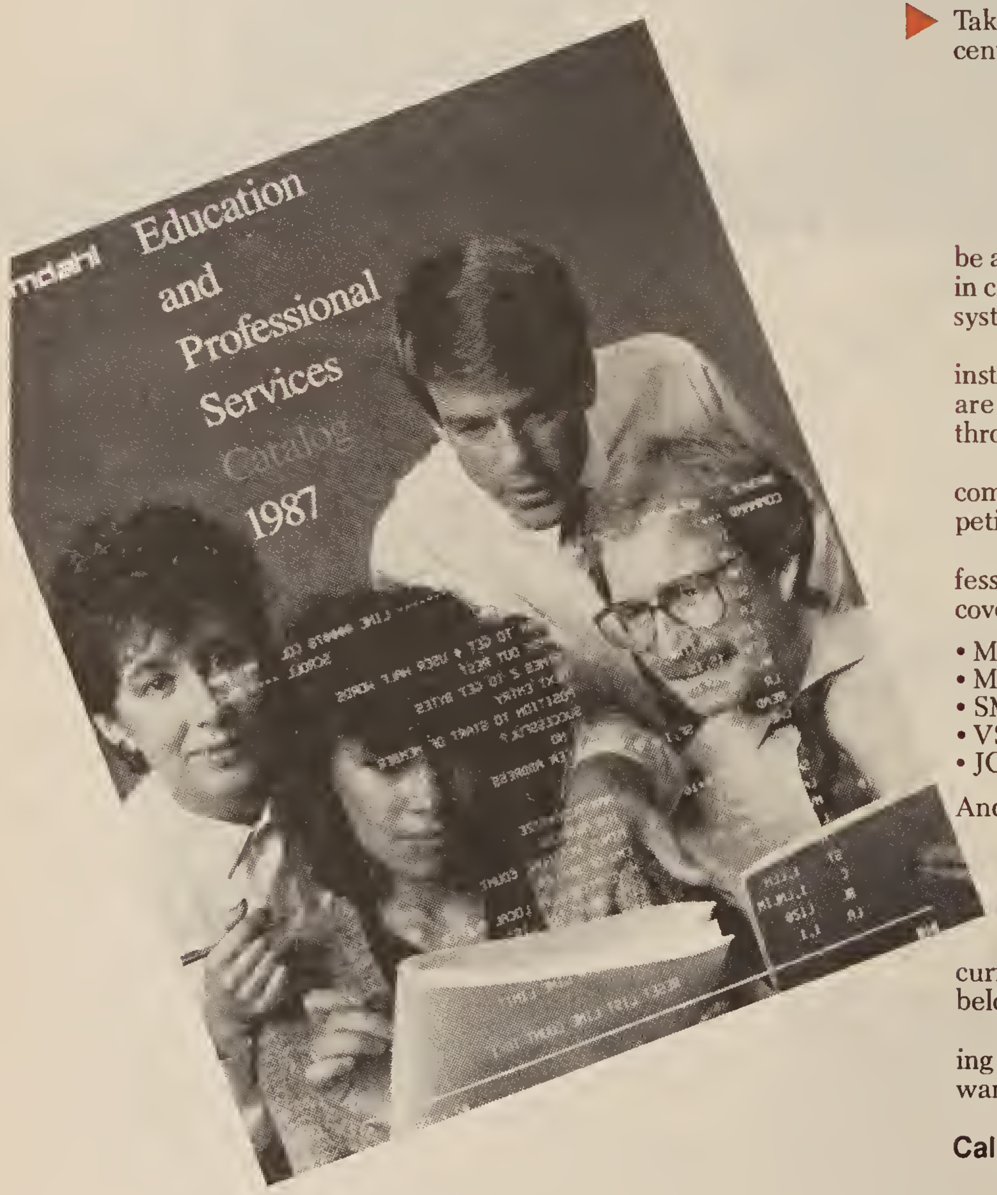

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NICKELS AND DIMES

Micropro International Corp. announced revenue for the second quarter ended Feb. 28 of $9.2 million, compared with $10.5 million in the previous year.

Profits were $548,000, or 4 cents per share, compared with $863,000, or 7 cents per share, in the like quarter a year ago.

Fibronics International, Inc. announced revenue for the quarter ended Dec. 31 of $9 million, compared with $8.1 million one year ago.

Net loss was $836,327, or 14 cents per share, compared with a loss of $34,926, or 1 cent per share, in the comparable period a year ago.

For the year, revenue was $30.1 million, compared with $28 million last year. Net loss was $2 million, or 34 cents per share, compared with a loss of $14,078 for the like period a year ago.

Adobe Systems, Inc. announced revenue for the first quarter ended Feb. 28 of $6.9 million, compared with $2.4 million last year.

Profits were $1.6 million, or 15 cents per share, compared with $550,000, or 6 cents per share, in the previous year.

Systematics, Inc. reported revenue for the third quarter ended Feb. 28 of $37.8 million, compared with $31.6 million for the third quarter of last year.

Profits were $3.6 million, or 33 cents per share, compared with $3 million, or 27 cents per share, in the comparable period last year.

Concurrent Computer Corp. reported net income for the second quarter ended Jan. 31 of $1.2 million, or 10 cents per share, compared with $3.3 million, or 35 cents per share, in the same period a year ago.

Revenue was $60.8 million, compared with $69 million in the second quarter last year.

Autodesk, Inc. announced revenue for its fourth quarter ended Jan. 31 of $15.5 million, compared with $10 million one year earlier.

Profits were $3.5 million, or 49 cents per share, compared with $2.2 million, or 32 cents per share, in the like period a year ago.

For the year, revenue was $52.4 million, compared with $29.5 million for the previous year.

Profits were $11.6 million, or $1.66 per share, compared with $6.5 million, or $1.03 per share, last year.

System Industries, Inc. announced revenue for the second quarter ended Jan. 25 of $28.8 million, compared with $24.7 million in the comparable quarter last year.

Profits were $1.2 million, or 26 cents per share, compared with $1.1 million, or 26 cents per share, in the previous year.

Ultimate Corp. announced revenue for the third quarter ended Jan. 31 of $42.1 million, compared with $38.2 million reported a year ago.

Profits were $4.1 million, or 42 cents per share, compared with $4.1 million, or 48 cents per share, in the previous year.

Encore Computer Corp. announced revenue for the first quarter ended Jan. 24 of $2.2 million, compared with $24,000 in the previous year.

The company reported a net loss of $1.8 million, or 8 cents per share, compared with a net loss of $3.8 million, or 17 cents per share, for the like quarter a year ago.

ICOT Corp. announced revenue for the second quarter ended Jan. 31 of $14 million, compared with $13.5 million posted a year ago.

Profits were $2.3 million, or 21 cents per share, compared with $1.8 million, or 17 cents per share, last year.

Former Iomega president named chairman, CEO of Sequoia Systems

MARLBORO, Mass. — Gabriel Fusco, former president of Roy, Utah-based Iomega Corp., has been named chairman of the board and chief executive officer of Sequoia Systems, Inc.

Fusco, who has 30 years of experience in the computer industry, will assist Sequoia's management group in its efforts to establish the company as a major name in the large-scale on-line transaction processing marketplace, the company said.

To date, Sequoia has been plagued with many start-up problems, especially product development delays.

At Iomega, Fusco directed the transition of the company from its research and development focus to its fully operational manufacturing and marketing focus. He oversaw the operations of Iomega from when he started in 1983 to early 1987 when annal sales rose from less than $1 million to more than $125 million.

Prior to Iomega, Fusco was with IBM for 26 years, most recently as director of sales and distribution channels for the Information Systems Group.

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Microsoft opens Taiwan lawsuit barrage

TAIPEI, Taiwan — Microsoft Corp. has filed the first of what may be more than 200 lawsuits against Taiwanese microcomputer manufacturers that the Redmond, Wash.-based firm claims are infringing on copyrights of the company's MS-DOS operating system.

The suit follows the recent seizure of 15,000 copies of an allegedly counterfeit operating system sold by Falcon Technology in the U.S.

According to the Hong Kong-based newsletter "Taiwan Electronics Business," the lawsuit listed Chang Yu-chieh, chairman of Evergood Computer International Corp., as a co-defendant with the company's former president, Lee Shih-hsun, and Evergood's former export manager, Kao Yueh-sung. The suit charged Chang with 89 violations of Microsoft's intellectual property rights.

Prior to the court action, Lee and Kao had left Evergood to set up their own company, called Very Cheap Computer Products Co.

Evergood maintains that the company sublicensed its operating system from Hong Kong-based Microware United Ltd., which reportedly gained its DOS manufacturing license from the now-defunct Falcon Technology.

The suit will be tried in district court in Taipei, where cases are required to be finished within six months.

The district court is believed to have issued warrants to search Evergood in November 1986 and again in February. Allegedly counterfeit copies of the operating system were seized in the second raid, but the volume and value of the raid was not disclosed.

The law firm representing Microsoft in Taipei, Lee and Li, warned 232 Taiwan manufacturers in October that a crackdown on unlicensed MS-DOS production was coming. A statement by the firm made it clear that Microsoft had no agent, distributor or representative for MS-DOS in Taiwan, and directed local OEMs to contact Microsoft directly to license the operating system.

On Feb. 12, advertisements were placed in three Taipei newspapers stating that Microsoft had never authorized Falcon Technology to manufacture, distribute or sublicense any version of MS-DOS.

Two Taiwan computer companies, Mitac Co. and Sertek International, act as agents for Microsoft applications programs in Taiwan, but not for MS-DOS.

This story was reported by Computerworld Asia, *a CW publication with editorial offices in Hong Kong and Singapore.*

Edwardian age

CONTINUED FROM PAGE 85

the Bell system, Edwards was said to have suffered from culture shock upon his arrival. It was a condition, according to insiders, that he never shook in his three years with the firm.

Despite the cultural conditions, Edwards did create a division by drawing from disparate and sometimes conflicting elements within the AT&T monolith. He pulled together technology and personnel to create a formidable assemblage of Unix-based minicomputers, personal computers and peripheral products.

Edwards propelled AT&T from a standing start to one of the leading domestic suppliers of PCs and transformed the firm's neglected modem and IBM 3270-compatible terminal business into vital contributors to the division's results.

From Edwards' standpoint, AT&T has done fairly well in the minicomputer business with its Unix-based 3B2 family. "We went up against the best in the federal government bids and landed $2 billion in orders over three years," he says.

AT&T's losses in the computer business, Edwards points out, have to be judged within the proper context. The computer systems operation, Edwards says, had a gross profit margin of about 45%, a reasonable figure by computer industry standards.

Substantial research and development expenses and overhead that AT&T corporate allocated to each operation in the days prior to the massive layoffs, however, caused the hemorrhaging at the division, Edwards explains.

That Edwards would depart AT&T only days before Cassoni would emcee the firm's first major product rollout in a year was surely a coincidence. Edwards says he had intended to leave AT&T once his assignment was completed.

He accepted an offer to become the first chief executive officer of Telwatch, Inc., a start-up network management systems vendor formed recently through the merger of Onecom, Inc. in Boulder, Colo., and Telaccount, Inc. in Sacramento, Calif.

If profitability is reached, Edwards certainly will have much to cheer. AT&T's Data Systems division is not expected to reach the black for another two years, if ever.

At least now, it seems, Edwards will have control of his own destiny.

Alper is *Computerworld*'s Mid-Atlantic bureau correspondent.

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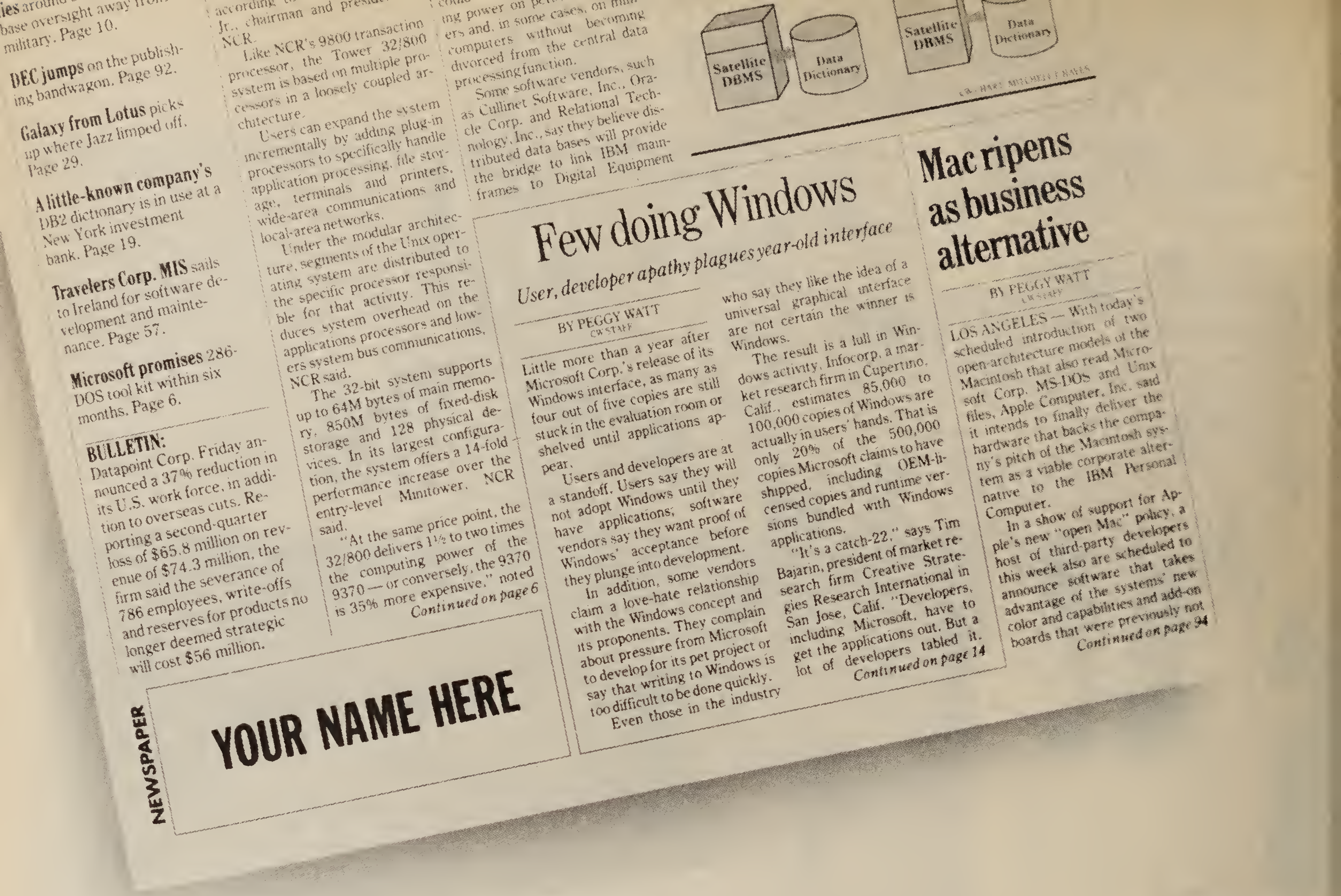
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base oversight away fro
military. Page 10.

DEC jumps on the publishing bandwagon. Page 92.

Galaxy from Lotus picks up where Jazz limped off. Page 29.

A little-known company's DB2 dictionary is in use at a New York investment bank. Page 19.

Travelers Corp. MIS sails to Ireland for software development and maintenance. Page 57.

Microsoft promises 286-DOS tool kit within six months. Page 6.

BULLETIN:
Datapoint Corp. Friday announced a 37% reduction in its U.S. work force, in addition to overseas cuts. Reporting a second-quarter loss of $65.8 million on revenue of $74.3 million, the firm said the severance of 786 employees, write-offs and reserves for products no longer deemed strategic will cost $56 million.

according
Jr., chairman and presi
NCR.

Like NCR's 9800 transaction processor, the Tower 32/800 system is based on multiple processors in a loosely coupled architecture.

Users can expand the system incrementally by adding plug-in processors to specifically handle application processing, file storage, terminals and printers, wide-area communications and local-area networks.

Under the modular architecture, segments of the Unix operating system are distributed to the specific processor responsible for that activity. This reduces system overhead on the applications processors and lowers system bus communications, NCR said.

The 32-bit system supports up to 64M bytes of main memory, 850M bytes of fixed-disk storage and 128 physical devices. In its largest configuration, the system offers a 14-fold performance increase over the entry-level Minitower, NCR said.

"At the same price point, the 32/800 delivers 1½ to two times the computing power of the 9370 — or conversely, the 9370 is 35% more expensive," noted

Continued on page 6

ing power on
ers and, in some cases, on
computers without becoming divorced from the central data processing function.

Some software vendors, such as Cullinet Software, Inc., Oracle Corp. and Relational Technology, Inc., say they believe distributed data bases will provide the bridge to link IBM mainframes to Digital Equipment

Few doing Windows

User, developer apathy plagues year-old interface

BY PEGGY WATT
CW STAFF

Little more than a year after Microsoft Corp.'s release of its Windows interface, as many as four out of five copies are still stuck in the evaluation room or shelved until applications appear.

Users and developers are at a standoff. Users say they will not adopt Windows until they have applications; software vendors say they want proof of Windows' acceptance before they plunge into development.

In addition, some vendors claim a love-hate relationship with the Windows concept and its proponents. They complain about pressure from Microsoft to develop for its pet project or say that writing to Windows is too difficult to be done quickly.

Even those in the industry who say they like the idea of a universal graphical interface are not certain the winner is Windows.

The result is a lull in Windows activity. Infocorp, a market research firm in Cupertino, Calif., estimates 85,000 to 100,000 copies of Windows are actually in users' hands. That is only 20% of the 500,000 copies Microsoft claims to have shipped, including OEM-licensed copies and runtime versions bundled with Windows applications.

"It's a catch-22," says Tim Bajarin, president of market research firm Creative Strategies Research International in San Jose, Calif. "Developers, including Microsoft, have to get the applications out. But a lot of developers tabled it.

Continued on page 14

Mac ripens as business alternative

BY PEGGY WATT
CW STAFF

LOS ANGELES — With today's scheduled introduction of two open-architecture models of the Macintosh that also read Microsoft Corp. MS-DOS and Unix files, Apple Computer, Inc. said it intends to finally deliver the hardware that backs the company's pitch of the Macintosh system as a viable corporate alternative to the IBM Personal Computer.

In a show of support for Apple's new "open Mac" policy, a host of third-party developers this week also are scheduled to announce software that takes advantage of the systems' new color and capabilities and add-on boards that were previously not

Continued on page 94

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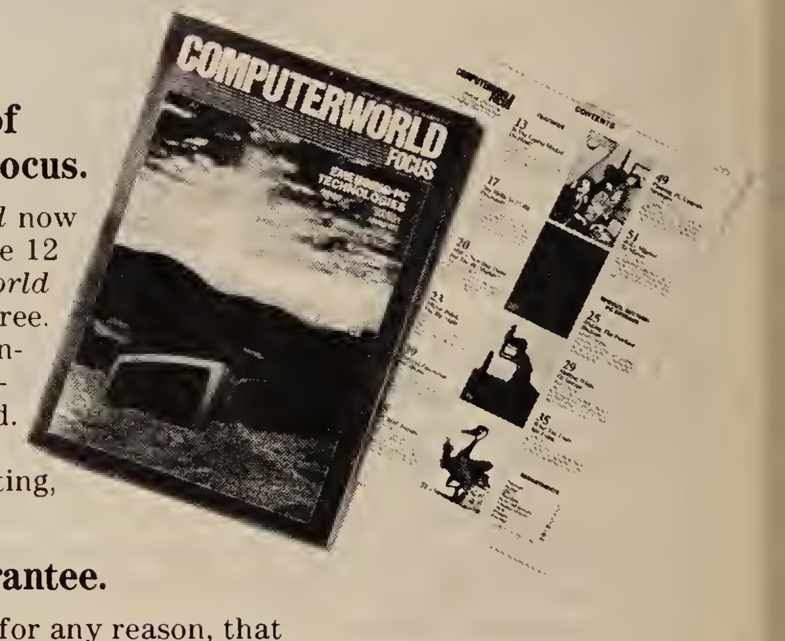

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COMPUTERWORLD
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EMPLOYMENT TODAY

Consulting rewards bittersweet

Isolation, uncertainty are prices paid for freedom

BY LINDA CORMAN
SPECIAL TO CW

Gene Sutton, working seven days a week and more than 12 hours a day as a programmer and project leader for Codon Corp. in Bedford, Mass., scarcely saw the sunshine in the summer of 1975. When Codon folded eight months later, Sutton reevaluated his career.

"That experience left a sour taste in my mouth. I worked real hard for Codon. But despite my efforts, they went broke. I might as well work for myself, so if I go broke, it will be my own fault," says Sutton, who now runs an independent consulting business.

Likewise, Gene Talbot of Naugatuck, Conn., became a consultant after 23 years of working for others because he had a passion for microprocessors and a hunch that micros would become an increasingly important part of the market.

For many who have headed out on their own, various factors — a job gone sour, a desire to pursue a special interest — converge to precipitate their decisions.

"It's the John Wayne syndrome," says John Christensen, executive director of the Independent Computer Consultants Association (ICCA), a St. Louis-based advocacy group with 2,300 members nationwide. "Many people who get into the computer world want to expand beyond the button-down eight-hour business day."

Consultants are free to select their hours; to put in a 100-hour week when a burst of energy hits or to slack off when other pressures of life demand attention.

Freedom to be choosy

They also have the freedom to be choosy about which jobs they take. For example, Margaret Chock of Santa Monica, Calif., a data base management and pattern-recognition specialist, shuns the defense-industry projects that are dominant in her area. Instead, she focuses on health care and agriculture.

Many consultants report that they can earn more money than they would working for an employer. Within two years of starting his own business, Talbot says, he just about doubled his income.

Beginning consultants often find their first clients through contacts at their former workplaces. Obtaining the second job, after several months out of the web of contacts an office environment provides, is often difficult for fledgling consultants.

For the most part, independent consultants tend to be among the brightest and most creative of those in data processing, Christensen says, so possessing valued skills is not a problem. But frequently, new consultants have difficulty telling potential clients what they have to offer.

"These people are sophisticated regarding technology and unsophisticated regarding business expertise and how to sell their services," Christensen explains. Advising members on marketing is one of the ICCA's main missions. Christensen recommends that consultants spend one day a week marketing and maintaining a stable of prospective clients.

Sutton, who has developed a healthy pool of clients but notes that a consultant's life is never 100% secure, says those considering independent work should "understand that being technically good is not enough. It's necessary but not sufficient. You need to be able to sell yourself as well as be able to perform."

Consultants who do their own marketing say word of mouth — through children's friends or spouse's colleagues — is the best way to find work. For those who cannot stomach the prospect of marketing, there are brokers and consulting firms.

In addition, brokers are virtually indispensable for certain DP specialists in the mainframe area and for those living in areas where a few large companies dominate the market, Christensen says. But one must be careful to work with a reputable broker — one that sends out resumes only after consulting the client.

> "BEING technically good is not enough. It's necessary but not sufficient. You need to be able to sell yourself as well as be able to perform."
>
> GENE SUTTON
> INDEPENDENT
> CONSULTANT

Both brokers and consulting companies take substantial cuts of earnings, averaging about 20%. Because of the new tax code, working with consulting firms may be more difficult. Some firms are interpreting the code to mean their clients must be employees of the broker, Christensen says.

Whether a consultant obtains jobs through brokers or through his own marketing, experience in a variety of companies is helpful but not a prerequisite. Some consultants, with the right specialties, get started with only a few years of experience. Some begin working for themselves right after college.

Opinions vary widely, but many consultants say that firms currently are looking for specialists in networking, MIS planning, microcomputer data bases and programming analysis for IBM mainframes.

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Isolation is also a shortcoming of consulting. There are clients, other consultants and associations of consultants with whom to socialize. But there is not the easy collegiality of meeting the same people on the job every day, Sutton observes. "There's no Christmas office party," Talbot says.

Corman is a staff writer for *Banker & Tradesman.*

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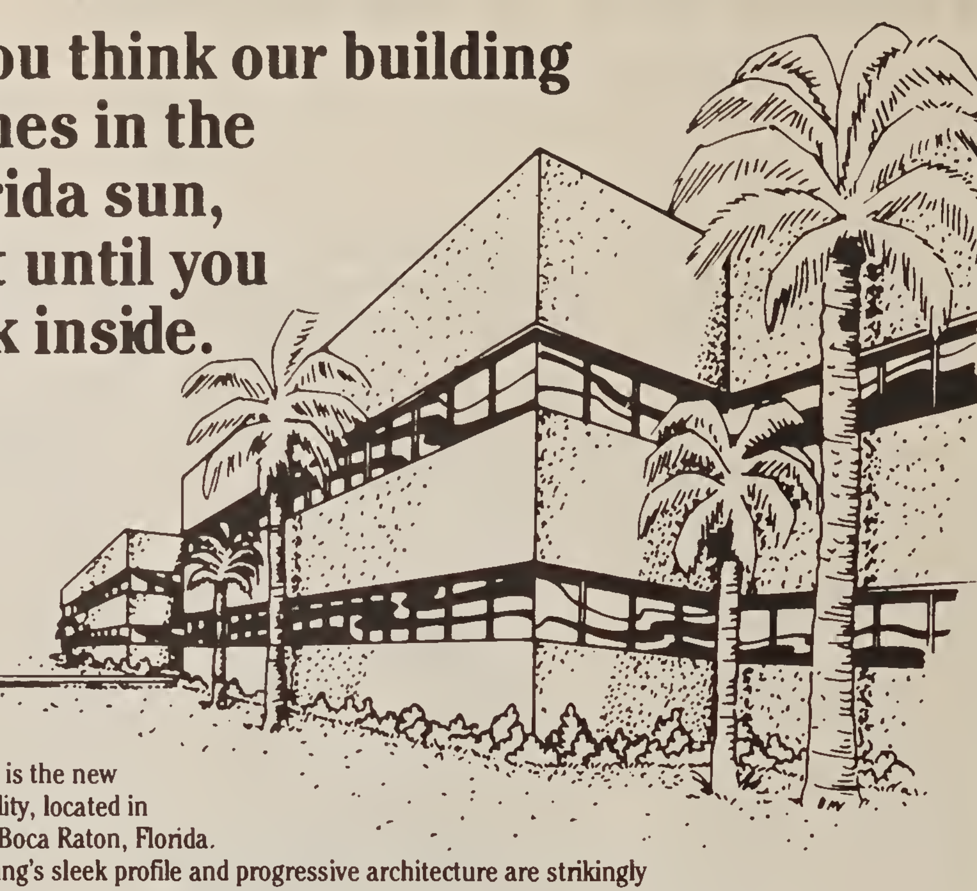

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For more information call (202) 343-4164.

Software Design Engineer capable of designing, developing and producing a series of sophisticated telecommunications test equipment. Must be familiar with analog and digital circuits and be comfortable in both hardware and software design. Will specialize in operating systems and real-time operations. Must have BS in Computer Science or equivalent (equiv or BS in related field such as business math or engineering). Minimum 2 years experience required. Job site and interview in Calabasas, California. Salary: $36,000/year full time. Send ad and resume to: Box #CW-B4899, Computerworld, P.O. Box 9171, Framingham, MA 01701-9171.

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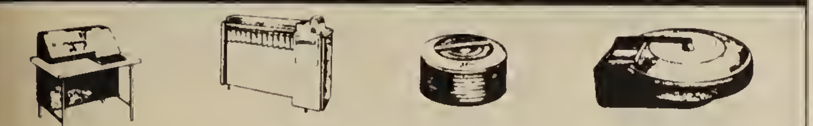

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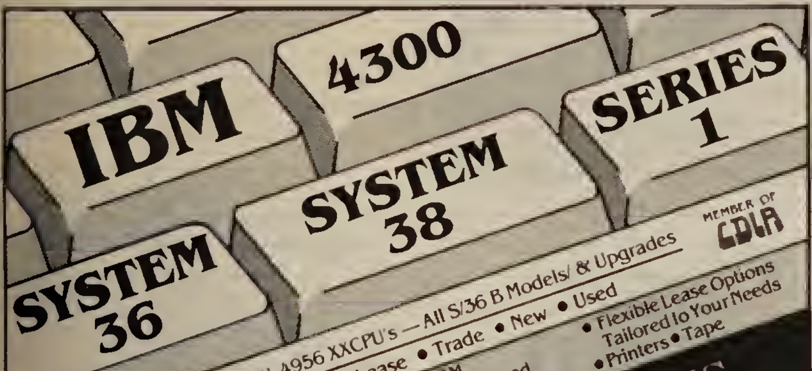

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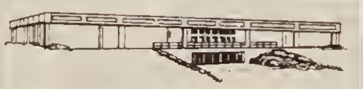

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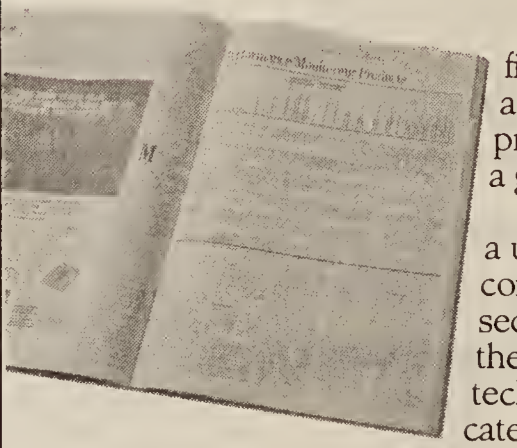

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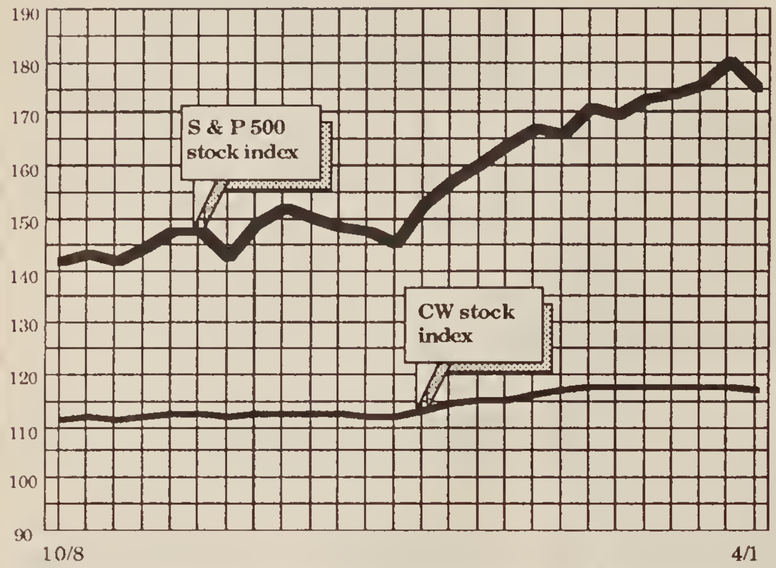

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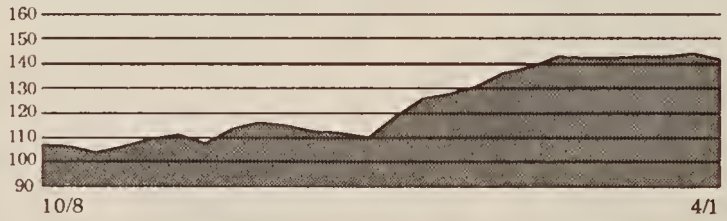

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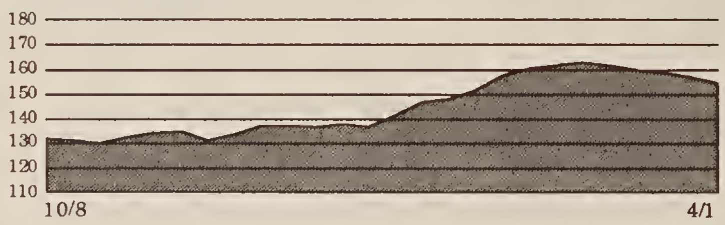
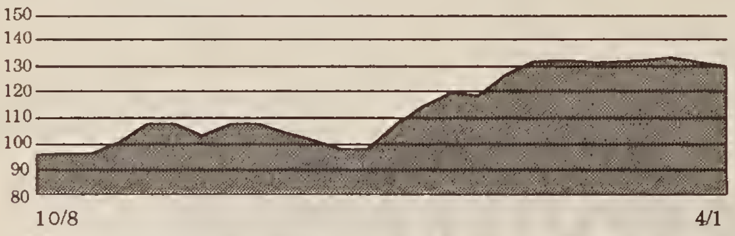


Software and DP Services



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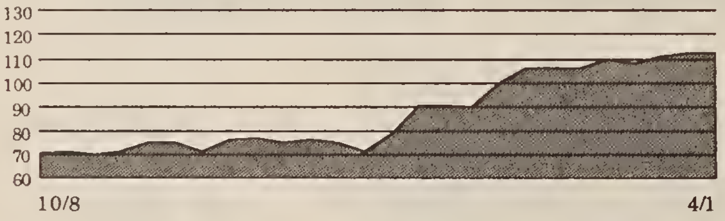

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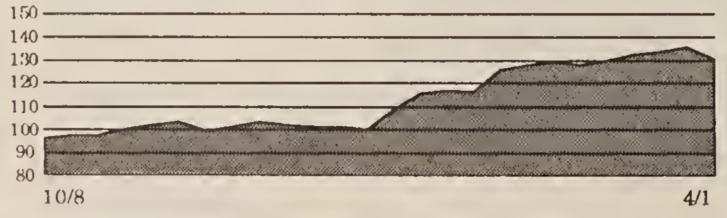
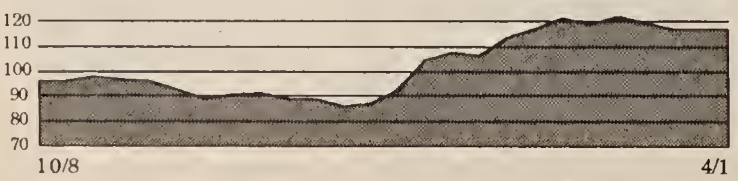


Leasing Companies



CW CHARTS: LESLIE J. MILLER

Computerworld Stock Trading Summary

CLOSING PRICES WEDNESDAY, APRIL 1, 1987

Computer Systems

EXCH		52-WEEK RANGE (1)		PRICE CLOSE APRIL 1 1987	WEEK NET CHNGE	WEEK PCT CHNGE
O	ALPHA MICROSYSTEMS	8	4	4.25	-0.2	-4.2
O	ALTOS COMPUTER SYS	19	10	13.50	-1.1	-7.7
A	AMDAHL CORP	41	14	36.50	-1.8	-4.6
O	APOLLO COMPUTER INC	23	9	19.75	+0.5	+2.6
O	APPLE COMPUTER INC	71	26	66.75	+0.0	+0.0
N	AT&T	28	22	23.88	-1.0	-4.0
O	C P T CORP	6	3	4.25	-0.1	-2.9
N	COMPAQ COMPUTER CORP	35	12	29.63	+1.8	+6.3
A	COMPUTER CONSOLES INC	12	7	9.38	+0.9	+10.3
O	CONCURRENT COMP CORP	19	11	15.75	+0.0	+0.0
N	CONTROL OATA CORP	31	20	29.88	-0.9	-2.8
O	CONVERGENT TECH	12	4	9.63	-0.9	-8.3
N	CRAY RESH INC	133	66	125.25	-0.8	-0.6
O	OAISY SYS CORP	15	8	9.75	-0.3	-2.5
N	OATA GEN CORP	45	25	31.88	+0.0	+0.0
N	OATAPOINT CORP	9	4	5.13	-0.4	-6.8
N	OIGITAL EQUIP CORP	173	76	162.25	-3.3	-2.0
N	FLOATING POINT SYS INC	46	11	14.00	+0.3	+1.8
N	GOULD INC	28	15	17.75	-0.4	-2.1
N	HARRIS CORP	40	27	37.88	+0.0	+0.0
N	HEWLETT PACKARD CO	63	36	57.00	-1.6	-2.8
N	HONEYWELL INC	84	58	70.38	-3.6	-4.9
N	IBM	162	116	151.13	-4.5	-2.9
O	IPL SYS INC	4	2	2.75	-0.4	-12.0
N	ITT CORP	66	43	60.25	-3.1	-4.9
N	M A COM INC	19	12	14.63	+0.5	+3.5
N	MATSUSHITA ELEC INDL LTO	136	77	100.50	-9.3	-8.4
O	MENTOR GRAPHICS CORP	29	11	26.25	-0.8	-2.8
N	N8I INC	14	8	10.38	+0.0	+0.0
N	NCR CORP	70	40	65.75	-2.4	-3.5
N	PRIME COMPUTER INC	24	16	21.25	-0.4	-1.7
O	STRATUS COMPUTER	37	18	36.50	+2.5	+7.4
O	SYM8OLICS INC	15	4	5.38	+0.0	+0.0
O	TANOEM COMPUTERS INC	75	23	71.50	-1.4	-1.9
N	TANDY CORP	56	31	48.00	-2.5	-5.0
N	TEXAS INSTRS INC	191	103	190.50	+2.8	+1.5
A	ULTIMATE CORP	35	13	21.75	-1.8	-7.4
N	UNISYS CORP	113	58	97.00	-6.0	-5.8
A	WANG LABS INC - 8	20	11	15.63	-0.5	-3.1
A	WANG LABS INC - C	20	11	15.38	-0.1	-0.8
N	XEROX CORP	78	49	76.38	+0.0	+0.0

Supplies & Accessories

EXCH		52-WEEK RANGE (1)		PRICE CLOSE APRIL 1 1987	WEEK NET CHNGE	WEEK PCT CHNGE
N	AMER 8USINESS PROOS	37	23	30.38	+1.1	+3.8
N	8ARRY WRIGHT CORP	24	14	18.00	+0.6	+3.6
A	DUPLEX PROOS INC	23	18	20.88	-0.4	-1.8
N	ENNIS BUSINESS FORMS INC	23	14	20.00	-2.3	-10.1
N	3M CO	140	97	129.38	-2.4	-1.8
N	MOORE LTD	28	20	25.13	-1.0	-3.8
O	STANOARO REGISTER CO	53	32	47.25	-0.3	-0.5
N	WALLACE COMPUTER SVCS	50	37	47.50	-1.3	-2.6

Software & DP Services

EXCH		52-WEEK RANGE (1)		PRICE CLOSE APRIL 1 1987	WEEK NET CHNGE	WEEK PCT CHNGE
O	ADVANCED COMP TECH	7	3	4.88	+1.1	+30.0
N	AOVANCEO SYS INC	22	12	20.25	-D.9	-4.1
N	AGS COMPUTERS INC	40	17	34.75	-2.3	-6.1
O	AMERICAN MGMT SYS INC	33	13	30.25	-0.8	-2.4
O	AMERICAN SOFTWARE INC	20	6	17.75	-11.4	-39.1
N	ANACOMP INC	8	3	7.38	-0.6	-7.8
O	ANALYSTS INTL CORP	11	4	9.75	-0.3	-2.5
O	ASHTON TATE	30	10	24.00	+0.4	+1.6
O	ASK COMPUTER SYS INC	17	9	14.25	-0.5	-3.4
O	ASTRADYNE COMP IND	3	1	1.53	-0.2	-10.9
N	AUTOMATIC DATA PROC	51	29	46.38	-2.6	-5.4
O	BOOLE & 8AB8AGE INC	11	4	9.25	+0.3	+2.8
N	COMPUTER ASSOC INTL INC	48	18	44.38	-0.8	-1.7
O	COMPUTER HORIZONS CORP	15	10	13.38	-0.1	-0.9
O	COMPUTER NETWORK TECH	10	4	5.38	+0.7	+14.7
N	COMPUTER SCIENCES CORP	61	30	58.75	-0.3	-0.4
N	COMPUTER TASK GROUP INC	19	11	14.13	-0.1	-D.9
O	COMPUTONE SYS INC	6	0	0.19	+0.0	+0.0
O	COMSHARE INC	18	10	16.50	+0.5	+3.1
N	CULLINET SOFTWARE INC	16	6	10.88	+0.9	+8.8
O	CYCARE SYS INC	17	7	9.25	+0.1	+1.4
O	DUQUESNE SYS INC	33	12	32.00	+3.3	+11.3
N	GENERAL ELEC CO	112	71	105.00	-5.1	-4.7
N	GENERAL MTRS CORP (CLASS E)	50	24	34.13	-1.4	-3.9
O	HOGAN SYS INC	17	7	15.50	-0.3	-1.6
O	INFORMATION SCIENCES INC	4	1	1.00	-0.1	-11.1
O	INFOTRON SYS CORP	17	7	8.50	+D.0	+0.0
O	KEANE INC	16	5	7.75	-0.4	-4.6
N	LOGICON INC	38	22	28.25	-1.0	-3.4
D	LDTUS DEV CORP	25	8	24.25	+3.3	+15.5
O	MANAGEMENT SCI AMER	21	11	17.00	-1.3	-6.8
O	MCI COMM CORP	12	5	6.50	+0.0	+0.0
O	MICOM SYS INC	18	10	15.50	-0.6	-3.9
O	MICRO PRO INTL CORP	6	2	4.75	-0.4	-8.4
N	MICROSOFT CORP	99	26	91.00	+1.1	+1.3
O	NATIONAL DATA CORP	27	16	23.25	-2.5	-9.7
O	ON LINE SOFTWARE INT	24	10	21.63	-1.1	-4.9
O	ORACLE SYS CORP	23	7	22.00	+1.5	+7.3
N	PANSOPHIC SYS INC	42	25	36.75	-D.3	-0.7
O	POLICY MGMT SYS CORP	3D	15	26.75	+0.0	+0.0
O	PROGRAMMING & SYS INC	13	8	10.50	-0.5	-4.5
O	REYNOLDS & REYNOLDS CO	42	27	34.00	-5.0	-12.8
O	SCIENTIFIC COMPUTERS INC	8	4	7.50	+0.0	+0.0
O	SEI CDRP	26	15	25.75	+0.3	+1.0
O	SHAREO MEO SYS CORP	53	30	34.63	-D.9	-2.5
O	SOFTWARE AG SYSTEMS INC	22	10	11.00	+0.0	+0.0
O	SOFTWARE PU8G CORP	16	5	16.00	+2.0	+14.3
A	STERLING SOFTWARE INC	21	10	11.63	-1.1	-8.8
N	SUNGUARO DATA SYSTEMS	20	10	17.50	-0.5	-2.8
N	UCCEL CORP	36	18	30.63	-3.3	-9.6
N	URS CORP	21	13	19.38	-1.0	-4.9
O	VM SOFTWARE INC	45	12	42.75	+0.0	+0.0

Semiconductors

EXCH		52-WEEK RANGE (1)		PRICE CLOSE APRIL 1 1987	WEEK NET CHNGE	WEEK PCT CHNGE
N	ADVANCEO MICRO OEV	32	13	20.38	+0.6	+3.2
N	ANALOG OEVICES INC	25	14	19.13	-1.1	-5.6
O	ANALOGIC CORP	.14	10	11.75	-0.1	-1.1
N	APPLIEO MAGNETICS CORP	31	13	29.13	-1.1	-3.7
O	AVANTEK INC	23	14	16.00	-0.9	-5.2
O	HAOCO CORP	7	3	5.88	-0.3	-4.1
O	INTEL CORP	42	16	41.00	+2.8	+7.2
O	MICRO MASK INC	7	2	6.50	+0.8	+13.0
N	MOTOROLA INC	58	34	55.00	-0.3	-0.5
N	NATIONAL SEMICDNDUCTOR	17	8	15.38	-0.5	-3.1
N	TERAOYNE INC	30	16	24.00	-D.8	-3.0

EXCH: N = NEW YORK; A = AMERICAN; P = PACIFIC; 8 = 8OSTON;
L = NATIONAL; M = MIOWEST; O = OVER-THE-COUNTER; S = SPLIT

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Peripherals & Subsystems

EXCH		52-WEEK RANGE (1)		PRICE CLOSE APRIL 1 1987	WEEK NET CHNGE	WEEK PCT CHNGE
A	AM INTL INC	9	5	8.25	-0.6	-7.0
A	ANDERSON JACO8SON INC	4	1	2.38	-0.3	-9.5
O	AST RESH INC	23	11	16.25	-1.3	-7.1
O	AUTOTROL CORP	10	5	7.75	+D.0	+0.0
O	AVANT GARDE COMPUTING	7	3	3.75	-0.1	-3.2
O	8ANCTEC INC	14	6	13.25	+1.5	+12.8
N	8OLT 8ERANEK & NEWMAN	60	37	46.88	-8.3	-15.0
A	CETEC CORP	9	5	5.63	+0.0	+0.0
A	COGNITRONICS CORP	6	2	3.13	-0.9	-21.9
N	COMPUGRAPHIC CORP	26	16	22.D0	+0.4	+1.7
N	COMPUTERVISION CORP	23	10	18.25	-0.1	-0.7
N	CONRAC CORP	30	12	29.50	+0.8	+2.6
A	DATAPRODUCTS CORP	18	11	13.13	-0.8	-5.4
A	OATARAM CORP	18	7	8.00	-0.3	-3.0
O	DATA SWITCH CORP	9	5	6.13	-0.3	-3.9
O	OATUM INC	7	4	5.75	-0.4	-6.1
N	OECISION INOS CORP	15	8	8.38	-0.6	-6.9
O	ENOATA INC	9	5	8.13	-0.6	-7.1
O	EMC CORP	34	11	25.00	-0.4	-1.5
O	EVANS & SUTHERLANO	40	20	32.50	-4.3	-11.6
N	FLOATING POINT SYS INC	46	11	14.00	+0.3	+1.8
O	GANDALF TECHNOLOGIES	11	5	9.50	-1.1	-10.6
N	GENERAL OATACOMM INO	15	8	11.88	-1.6	-12.0
N	HAZELTINE CORP	30	16	29.75	+0.0	+0.0
O	ICOT CORP	13	8	11.50	-0.9	-7.1
O	INFORMATION INTL INC	18	13	14.75	+0.5	+3.5
O	INTECOM INC	7	3	3.00	+0.0	+0.0
O	INTERLEAF INC	15	8	15.00	+1.4	+10.1
O	MEGAOATA CORP	7	2	4.88	-0.5	-9.3
A	MSI OATA CORP	17	10	16.00	+0.3	+1.6
N	NASHUA CORP	31	20	29.50	-0.3	-0.8
O	NETWORK SYS CORP	19	11	14.88	-1.9	-11.2
N	NORTH AMERN PHILIPS CORP	47	35	40.63	-0.1	-0.3
N	NORTHERN TELECOM LTD	45	27	41.00	-2.4	-5.5
O	NDVELL INC	50	15	47.00	+5.8	+13.9
N	PARADYNE CORP	11	4	6.13	-0.4	-5.8
A	PENRIL CORP	8	4	5.25	+0.0	+0.0
N	PLESSEY PLC	41	24	36.50	-4.3	-10.4
O	PRINTRONIX INC	15	10	11.00	-0.5	-4.3
N	QMS INC	18	11	14.50	-1.5	-9.4
O	RAMTEK CORP	7	3	4.50	-0.3	-5.3
N	RECOGNITION EQUIP INC	27	10	21.13	+0.1	+0.6
O	SCAN TRON CORP	19	11	13.00	-0.4	-2.8
N	SCIENTIFIC ATLANTA INC	18	9	16.63	-0.1	-0.7
O	SEAGATE TECHNOLOGY	42	9	37.25	+1.1	+3.1
N	STORAGE TECHNOLOGY	5	2	4.13	-0.1	-2.9
O	SUN MICROSYSTEM INC	33	11	31.13	-0.9	-2.7
A	T-8AR INC	8	5	7.50	-0.4	-4.8
A	TA8 PROOS CO	20	12	18.88	+0.0	+0.0
O	TANOON CORP	8	2	5.25	-0.6	-10.6
A	TEC INC	6	3	3.25	+0.4	+13.0
N	TEKTRONIX INC	43	27	35.38	-4.4	-11.0
O	TELEVIOEO SYS INC	4	2	2.88	-0.1	-4.2
N	TELEX CORP	102	52	88.00	-4.8	-5.1
N	TIMEPLEX INC	41	14	36.50	-0.8	-2.0
N	TITAN CORP	12	6	7.13	-0.3	-3.4
O	VISUAL TECHNOLOGY INC	1	0	0.44	+0.0	+0.0
O	WYSE TECH	30	13	21.63	-2.3	-9.4

Leasing Companies

EXCH		52-WEEK RANGE (1)		PRICE CLOSE APRIL 1 1987	WEEK NET CHNGE	WEEK PCT CHNGE
N	COMOISCO INC	30	15	29.38	+1.5	+5.4
N	CONTINENTAL INFO SYS	14	7	12.63	-1.0	-7.3
O	FINALCO GROUP INC	5	2	2.88	+0.0	+0.0
O	PHOENIX AMERN INC	8	3	5.63	+0.0	+0.0
O	SELECTERM INC	12	5	5.00	+0.3	+5.3
N	U.S. LEASING	52	38	50.50	-0.5	-1.0

Tech issues hold own

IBM, Microsoft, Autodesk defy market trends, post gains

While computer stocks have generally followed the raging bull market of the last few months, last week's activity proved that industry considerations can still outweigh overall market fluctuations.

When the Dow Jones industrial average plummeted 57 points last Monday, the market's most active stock, IBM, went up 1⅝ to 152⅜. Analysts credited the gain to speculation about the new IBM microcomputer generation to come later in the week. That speculation also lifted Microsoft Corp. five points to a new high of 96¾.

Autodesk, Inc., the high-flying developer of computer-aided design software for micros, announced a 3-for-1 stock split Monday after soaring to 86½ on the previous Friday.

The stock market's reaction to IBM's personal computer announcements on Thursday was negative for IBM and generally positive for its competitors, which analysts attributed to the long delays for many of the new products.

Big Blue dropped 3⅛ to 148, while Apple Computer, Inc. jumped five points to 71¾. Compaq Computer Corp. rose 1⅝ to 31¼, and Tandy Corp. gained 1¼ to 49¼.

CLINTON WILDER

Microsoft straddles software fence

Offers OEMs similar operating systems as IBM develops OS/2 versions

BY PEGGY WATT
CW STAFF

Microsoft Corp. has held on to a key role in IBM's operating systems world, but the firm can offer other personal computer manufacturers only similar, not duplicate, products as IBM gradually customizes its operating system.

At roughly the same time IBM releases its OS/2 operating system early next year, Microsoft said, it will release MS-OS/2 with the same features of IBM OS/2 Standard Edition 1.1, including a graphics-based interface, called Presentation Manager, that is built on a modified Microsoft Windows. Microsoft said it will mirror IBM's release of IBM-DOS 3.3 later this year with MS-DOS 3.3 for existing systems based on Intel Corp. 8088, 8086 and 80286 microprocessors.

Last week, IBM formally adopted Microsoft's graphical user interface concept with the announcement of plans to include Presentation Manager as part of OS/2.

Not fully compatible

But while Presentation Manager is similiar to the existing Windows, it is not fully compatible with the current Windows product. According to Microsoft, Windows applications, especially graphics-intensive ones, will require modification to run under the Presentation Manager.

"To the extent that the Presentation Manager is based on the Windows technology, you can carry forward some of your designs, but there is still a lot of detailed code you have to rewrite," said Ed Belove, vice-president of research and development for Lotus Development Corp.

IBM and Microsoft paths will also diverge somewhat next year when IBM releases its optional Extended Edition of OS/2. That operating system reportedly will contain IBM-specific protocols that may not be part of a corresponding Microsoft operating system (see story page 1).

Microsoft continues to develop systems software for a variety of OEMs. Scheduled for release by August is an MS-OS/2 development kit, including kernel software, languages and tools, and specifications for the Windows Presentation Manager and Local-Area Network Manager, said to be part of MS-OS/2.

One component will actually be a beta-test version of the operating system, which will let developers begin writing for OS/2, said Steve Ballmer, Microsoft vice-president of systems software.

Prior to release of the Presentation Manager, Microsoft is set to release Windows 2.0, which resembles the Presentation Manager to be included in OS/2 and is aimed at phasing in the use of a more advanced version of Windows. Windows 2.0 features overlapping instead of tiled windows and built-in Lotus/Intel/Microsoft Expanded Memory Specification support. The Windows upgrade also boasts significant performance improvements, according to Ballmer.

The changes to Windows as implemented in the Presentation Manager — and resulting incompatibilities with existing Windows and Windows 2.0 applications — drew mixed reactions from developers. "We were both right and wrong about Windows," said Dave Winer, president of Living Videotext in Mountain View, Calif. "Microsoft got IBM's endorsement, but what IBM is going to be shipping is not exactly Windows."

"Microsoft had a choice between no deal and half a deal," said Philippe Kahn, president of Borland International in Scotts Valley, Calif., who had early on scorned Windows development. "No major developer or major customer is going to buy Windows 2.0 if it's not going to run under the IBM environment.

Other developers said they have received the green light. "Given that IBM has now spoken, we'll be developing for that environment," said Luther Nussbaum, president of Ashton-Tate in Torrance, Calif. "At least now we know which Windows to write for."

IBM gives site licensing to 20-unit purchasers

BY ALAN ALPER
CW STAFF

NEW YORK — While introducing a phalanx of microcomputer products last week, IBM quietly began offering site licensing privileges to customers purchasing at least 20 microcomputer application and/or systems software packages in one year.

With the site licensing arrangement, customers can qualify for discounts of between 12% and 30% on licensing fees paid on software packages originally purchased directly from IBM or through its authorized and value-added dealers, the company said.

Previously, customers could only qualify for volume discounts if they licensed software directly from IBM.

Mix and match

Customers will be able to mix and match applications and systems software purchased to achieve the 20-package minimum, said Lee Reiswig, systems manager of communications and data management systems for IBM's Entry Systems division in Austin, Texas.

To qualify for the site licensing deal, customers have to estimate their personal computer software purchase plans during a 12-month period. At the end of that time, IBM will settle the difference between the number of copies made and the purchase estimate, regardless of whether the customer purchased the software directly from the company or through dealers, Reiswig said.

Products covered in the site licensing plan include all operating systems, Personal Decision Series applications and a variety of other packages, including IBM's 3270 Personal Computer emulation program. The volume discount also applies to qualifying customers who are upgrading operating systems software, the firm said.

Reiswig said the licensing plan is in response to corporate customer demands. "Many customers do not want to have to buy additional diskette copies of software if they intend to download it from a local-area network or host," he said.

Analysts said last week the site-licensing plan will improve IBM's standing with corporate customers but probably will do little to boost the firm's software revenue.

"It's a good move, but it will not necessarily buy them more business," noted Michael Gould, a senior analyst at The Yankee Group in Boston. "It will buy them points with customers."

With the site licensing plan, customers will receive further discounts if they do not require additional documentation. The additional discount is calculated on a product-by-product basis, Reiswig noted.

OS/2

FROM PAGE 1

Prior to last week's endorsement of a modified version of Microsoft's Windows interface, IBM had not shown a commitment to a graphical user interface. IBM, however, had been working with Microsoft to create a derivative of Windows, called the Presentation Manager, an essential element of SAA. "A big part of SAA is the standard user interface IBM is promoting. The Windows Presentation Manager implements the SAA standard user interface that they are implementing everywhere," said Microsoft Chairman Bill Gates.

The first versions of OS/2 Standard Edition 1.0, which IBM said will be available early in 1988, will support the new machines with basic IBM PC-DOS functions, address up to 16M bytes of memory and run applications concurrently, even those written for older versions of PC-DOS or MS-DOS. An upgrade of OS/2, called Version 1.1, will add the Presentation Manager. The Presentation Manager also contains some code from IBM's text-based Topview interface and extensions to the Graphical Data Display Manager.

The operating system's kernel and the Presentation Manager are identical to those developed by Microsoft, which will also market MS-OS/2 to OEMs. The operating systems will diverge as IBM ships its more advanced versions.

Both of the new operating systems will also run on the IBM Personal Computer AT and PC XT Model 286. For interim use, IBM announced IBM DOS 3.3, which supports hard-disk partitions of more than 32M bytes and is identical to the MS-DOS 3.3 that Microsoft said it will market.

Each enhancement to the IBM operating system adds connectivity, clearly targeting the MIS manager trying to tie diverse systems, from the mainframe and minicomputer to PCs, that have sprung up in the nearly six years since IBM introduced its first microcomputer.

DB2 DBMS planned

OS/2 Extended Edition, when it becomes available, reportedly will incorporate a data base that is described by IBM as "a relational data base system consistent with [IBM's mainframe] DB2 and IBM SQL." However, the two do not work in tandem without file conversion. The user builds queries on a menu-driven conversion system "borrowed from the PC world," said Jack O'Reilly, senior planner for IBM's Entry Systems Division in Austin, Texas.

The Extended Edition will also support query and report writing that will be consistent with QMF, IBM's mainframe end-user query and report writing tool. QMF allows users to formulate queries via menu selections, which are translated into SQL statements. IBM also plans to offer applications development tools for the extended operating system.

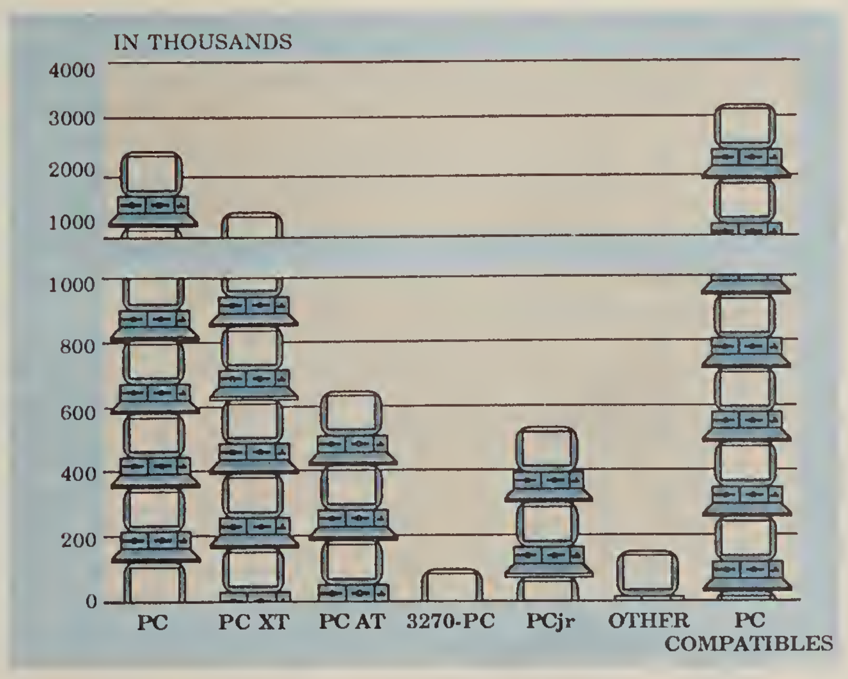
IBM also announced that a subset of its RT Personal Computer operating system, Advanced Interactive Executive, will be made available for the IBM Personal System/2. Spokesmen said PC-DOS 3.3 will be able to run as a task under Advanced Interactive Executive on the Personal System/2.

For users who require multitasking and mainframe access in the interim, IBM announced the 3270 Workstation Program to emulate IBM 3270 terminals through the Token-Ring network without need for a 3278/79 adapter. The program runs on PCs and allows up to four concurrent host sessions.

It reportedly will be available this summer for existing PCs and most of the Personal System/2 series and in early 1988 for the high-end Personal System/2 Model 80.

U.S. personal computer installation

IBM PC and compatibles



INFORMATION PROVICED BY INTERNATIONAL DATA CORP
CW CHART: SUSAN ALDAM

NOTABLE & QUOTABLE

"IT'S VERY different from where the industry was 15 months ago, when only Apple was championing graphics and the human interface. Now those things are moving toward the mainstream. I think that's very positive for the industry, for Apple and for IBM. The winners are the users. The losers are the other hardware manufacturers."

JOHN SCULLY, CHAIRMAN OF APPLE COMPUTER, INC.

"THEY ARE UPPING the ante in terms of the engineering effort, the gate arrays and the price/performance they are providing. It is a challenge to the clones, not because of any sort of closed, proprietary thing, but rather just the quality of the products."

BILL GATES, CHAIRMAN OF MICROSOFT CORP.

"TWO AREAS THEY focused on were connectivity and data base. IBM has a unique advantage. To the extent that you are using IBM mainframes and networking capability, your needs may be unique to the IBM system."

ED BELOVE, VP AT LOTUS DEVELOPMENT CORP.

"EVERYBODY criticized IBM in the past for lacking a 386 machine, graphics ability, easy-to-use interface and more. This removes a great deal of uncertainty and speculation, and people can now make their choices — even though these choices are harder to make."

EDWARD M. ESBER JR., CHAIRMAN OF ASHTON—TATE

"THE NEW MACHINES stand out for their incompatibility with the existing standard. They won't accept existing software on a 5¼-in. media, they won't even accept it if you convert it over to 3½-in. media. You can't take your software with you, and you can't take boards you may have internally. Basically, you start from scratch."

ROD CANION, CHAIRMAN OF COMPAQ COMPUTER CORP.

"IT WILL DO WELL for them in the largest.accounts, provided they get over people being a little miffed at them for obsoleting some equipment. But as far as the broad market is concerned, it could be interpreted as actually a retreat."

JOHN ROACH, CHAIRMAN OF TANDY CORP.

Connectivity comes out on top

BY PATRICIA KEEFE
CW STAFF

NEW YORK — IBM last week acquiesced to large-user demands and announced an array of products designed to facilitate greater connectivity between, and portability of applications across, multiple IBM product lines.

Connectivity was interwoven throughout a 200-plus barrage of products, as IBM focused strongly on Systems Network Architecture (SNA), Systems Application Architecture (SAA) and the LU6.2 peer-to-peer communications protocol.

IBM's unveiling of its latest generation of personal computers, the Personal System/2 family of workstations, revealed more than just a new direction in personal computer technology. In an effort to hold clone makers at bay, IBM is attacking its weakest point — connectivity, said Paul Rampel, president of The Orion Group, an SNA developer in Berkeley, Calif.

IBM is clearly pulling PCs under the SNA umbrella, added Claire Fleig, director of system research for International Technology Group in Palo Alto, Calif.

"I think these are all signs that IBM has recommitted itself to its Fortune 500 mainframe-dominated customer base," said William Krause, president of 3Com Corp., an independent network vendor based in Santa Clara, Calif.

The most immediate impact on users will be in the areas of improved IBM Token-Ring network performance and greater network management capabilities.

IBM also gave a boost to its Netbios interface, refuting speculation about Netbios's demise. Via a new IBM local-area network (LAN) Support Program, IBM announced Token-Ring support for the PC-based networking interface and reduced its memory storage requirements.

Netbios was initially released with IBM's broadband PC Network and has evolved into a microcomputer network standard. IBM watchers have expected a shift away from Netbios to LU6.2. Instead, both protocols will play a role in IBM's connectivity plans, said Rudolf Stobl, a senior analyst with A. D. Little in Cambridge, Mass.

IBM also enhanced its much-maligned network operating system, the PC LAN Program, which was introduced with the PC Network. Version 1.2 of the PC LAN Program provides file, print and message functions and enables users to share program applications and data bases across the network.

IBM claimed to have increased the Token-Ring's performance as much as 4.8 times. But the PC Network Program still lacks true electronic-mail capabilities, support for multiple servers and a naming service for internetworking.

IBM also introduced five Token-Ring and PC Network cards that provide increased performance, lower cost and support for the new generation of personal computers.

The IBM Token-Ring Adapter/A provides up to 16K bits of random-access memory and provides all the functions of the previously released IBM Token-Ring network PC Adapter II at a lower price.

Also unveiled was a baseband AT&T Starlan version of the PC Network, which sources expect will be sold primarily to education markets. The IBM PC Network-Broadband Adapter II attaches IBM Personal Computers and the Model 30 of the IBM Personal System/2 to the IBM PC Broadband, while the Adapter II/A attaches all other new models to the network.

Both cards support Netbios and IEEE 802.2 protocols via the IBM LAN Support Program, which also supports the Advanced Program-to-Program Communications protocol.

Network management was another major focus of IBM's networking announcements. Operating either as a stand-alone system or as an adjunct to the Netview/PC program, IBM's LAN Manager Version 1.0 introduces a failure/error-alert fea-

Continued on page 109

IBM joins desktop publishing fray

Turnkey system based on latest micro can produce tabloid newspapers

BY ALAN ALPER
CW STAFF

NEW YORK — Seeking a piece of the fast-growing and lucrative desktop publishing market, IBM unveiled last week a turnkey publishing system based around the new IBM Personal System/2 Model 30 microcomputer.

The system facilitates the creation of documents with mixed text, graphics and images on a single page. It can be used to create publications such as newsletters, brochures, manuals and even tabloid-size newspapers, IBM said.

In addition, IBM also unveiled a publishing system, marketed as a Solutionpac, for its mini and mainframe computers. Called VM Edition, the version is for use with IBM 9370, 4300 or 3090 systems running the VM/SP or VM/IS operating system. IBM said general availability of VM Edition is planned for the third quarter, at which time pricing will be announced.

The publishing Solutionpac conforms with the Postscript page-description language developed by Adobe Systems, Inc. It features a six page/min. laser printer with 300 dot/in. resolution manufactured by Ricoh Co. in Japan.

The turnkey system comes bundled with IBM PC-DOS 3.3 and Microsoft Corp.'s Windows Paint and Windows Write as well as Aldus Corp.'s Pagemaker software. A mouse and a choice of high-resolution color or monochrome displays come with the system, IBM said.

The Solutionpac personal publishing system will be available in the third quarter and lists for $8,553, IBM reported.

The VM Edition includes Publishing Systems' Drawmaster, the APL2 programming language, IBM's Image Handling Facility and 3812 and 3820 printing options.

Embedded controller

In contrast to many competitors, including Apple Computer, Inc., IBM chose to embed its desktop publishing controller in the personal computer rather than within its laser printer, the Personal Pageprinter. This approach, analysts said, may let IBM's system to outperform the competition offerings.

"It takes advantage of the processing speed of the PC," observed Charles LeCompte, editor of the "Printout" newsletter, a publication that tracks the desktop publishing market. "One of the criticisms of the Apple desktop publishing system is that it is slow."

Apple's Laserwriter, though, prints at a speed of eight page/min., compared with IBM's desktop publishing system, which outputs at six page/min. "It therefore is really hard to say, whether IBM's approach is really better than Apple's," LeCompte added. IBM's printer costs $2,199 when purchased separately

IBM Personal Computer XTs and ATs can also be upgraded to a desktop publishing system, IBM said.

Cautious MIS optimism for Personal System/2

BY DAVID BRIGHT
CW STAFF

Corporate managers last week responded with cautious optimism to IBM's Personal System/2 announcements but said they were not yet ready to commit to the new architecture.

Now that the architecture is finally here, the task at most corporations will be to sort out IBM's numerous announcements and take a close look at the machines in order to figure out what strategy to take.

The announcements raise a myriad of questions, such as how compatible with existing software the new systems really are, what is required to implement the 3270 Workstation Program that offers multitasking, how long it will take third-party vendors to develop specialty boards, how much of a hassle it will be to convert to the 3½-in. floppy disk drive and what Compaq Computer Corp.'s inevitable response will be.

Managers indicated they would need a clear-cut reason for converting to the architecture. An enticing architecture with a good price/performance point, they said, is not enough.

"It doesn't make sense for us just to change for technology's sake," said Bruce Johnson, manager of the PC Resource Center at Deloitte, Haskins & Sells in New York. "There has to be some quantum improvement in the productivity or usability at the end-user level for us to want to make a change," he said. What is lacking, he noted, is applications software that would bring about such an improvement.

The price is the thing

But some managers argued that the price/performance improvement is the most important issue of all. Joseph Brophy, senior vice-president at The Travelers Corp. in Hartford, Conn., said he was impressed with the Model 50, based on Intel Corp.'s 80286 processor, and would prefer not to buy any of the older IBM Personal Computer ATs.

"With the Model 50, you're getting twice the performance for substantially less cost. From a budgetary standpoint, I'm happy. I think in general it will be good for everybody."

But the Intel 80386-based Model 80, which comes as a floor-standing tower, is "a different animal," Brophy said, adding that it will see use mostly as a file server.

Bite the bullet

While it is generally agreed that converting to the 3½-in. format will be an inconvenience, many managers concur that it may be time to make the change. Walt Kennamer, senior manager of the National Computer Audit Group at Ernst & Whinney in Cleveland, termed the conversion "a manageable problem. I applaud a move that gets us there quicker."

The accounting firm of McGladrey, Hendricksen & Pullen said it will adopt a wait-and-see attitude. The biggest concern is whether a large number of software developers will convert their programs to the new 3½-in. format, said Jon Seebach, head of national microcomputer functions at the company's Minneapolis office. "People are not going to change overnight," he said.

As a way of easing the transition, IBM should have included in the new boxes at least one slot that accepts boards designed for the AT, said Cheryl Currid, manager of sales, systems, planning and information at the Coca-Cola Co. Foods Division in Houston. Since IBM has built more functionality into the motherboards, there will be less of a need for add-in boards. But Currid pointed out that this cuts people off from using products like tape-drive controllers and non-IBM local-area network adapters.

Disk frustration

Because the Intel 8086-based Model 30 will not run Operating System/2, most corporate managers are considering the Model 50 as the new architecture's entry-level system. But according to Larry van Goethem, director of systems support at Sara Lee Corp. in Chicago, it is "a shame" that the Model 50 comes with nothing larger than a 20M-byte hard disk drive.

Coca-Cola Food's Currid — a strong proponent of networking — added that IBM should offer a version of the Model 50 without a hard disk because not every workstation node requires one.

If they need new systems while they are still in the evaluation process, many managers indicated that at least for the short term, they would have to stick with the standard systems, particularly PC ATs, Compaq Deskpro 286s or Deskpro 386s.

Meanwhile, Julian Horwich, director of the Chicago Association for Microcomputer Professionals, said, "The big issue is, What will Compaq announce?" Compaq President Rod Canion said that Compaq will, as usual, base its strategy on market demand.

It is unclear how available ATs will be. IBM declined to say whether it is still producing the systems.

Disk changes

FROM PAGE 1

internal option for the Models 60 and 80 and an external option for the Models 30 and 50, increases storage capacity of the systems by up to 1.6G bytes.

IBM also announced an operating system designed to exploit the protected-mode abilities of the 80286- and 80386-based systems, called Operating System/2. (See stories pages 1 and 107.) An extended version of the IBM 3270 Workstation Program will permit users to perform multitasking applications and to connect to IBM mainframe systems.

"The whole line is targeted at connectivity and systems-level architecture. We think it plays to what the DP manager wants to do," said Ed Kfoury, vice-president of development at IBM's Entry Systems Division in Montvale, N.J. "We needed to set a direction our customers could live with over the next several years."

"These are systems, not products," said Larry Ford, assistant group executive of IBM's Information Systems Group in Rye Brook, N.Y. "They will help MIS address the needs of individuals and companywide concerns as well."

Some analysts said they believe the 80286- and 80386-based systems' new bus architecture puts MIS executives in a quandry over which standard to support. "Large accounts now have to decide whether to develop applications around the generic standard that has developed around IBM's Personal Computer bus or begin phasing their entire end-user computing operations over the new architecture," said Michael Goulde, senior analyst with The Yankee Group, a market research firm based in Boston.

IBM's Ford agreed. "The big challenge [for both IBM and MIS/DP executives] is deciding which applications are right for DOS and which are right for Operating System/2," Ford said.

IBM's decision to change its bus architecture was primarily motivated by the desire to improve system performance, not to make its machines more difficult to copy, several IBM executives said. "We didn't say, 'Let's find technologies that the clones can't deal with,' " Kfoury said. "We took the technologies we felt were the best in the industry and put them to work at this end of the line."

The new bus design gives the systems better balance, eliminating bottlenecks that slowed corporate software development and office productivity. The custom logic chips surrounding the 80286 and 80386 engines likewise are primarily intended to improve system performance, IBM officials said. However, they admitted, the new architecture will retard clone makers' efforts.

The chips, which reside on the systems' motherboards, replace several plug-in boards made by third-party vendors. While these boards are not compatible with the 80286- and 80386-based members of the Personal System/2 family, IBM will make the technical specifications of the bus available shortly to third-party developers.

Another problem the new systems may cause stems from the 3½-in. disk drives. Some analysts pointed out that MIS managers may encounter technical difficulty in switching user applications over to the new format and said many smaller developers cannot afford to ship both 5¼- and 3½-in. versions of their applications.

IBM said it expects users to have little difficulty moving information between the two formats because it is providing ways to do so. It said it will supply users with external 5¼-in. disk drives or with a cable that allows systems with 5¼-in. drives to download applications to systems with 3½-in. drives and various conversion kits, which should be available through IBM-authorized dealers.

IBM also announced price reductions on its PC AT lines by an average of $650 and on its PC XT and 3270 PC by an average of $700. The company also reduced the price of its PC Convertible from $1,995 to $1,695.

IBM Personal System/2 series

	Model 30	Model 50	Model 60	Model 80
Microprocessor	8086	80286	80286	80386
Standard memory	640K bytes	1M byte	1M byte	Up to 2M bytes
Expandable to		7M bytes	15M bytes	16M bytes
Diskette size and capacity	3½ in. 720K bytes	3½ in. 1.44M bytes	3½ in. 1.44M bytes	3½ in. 1.44M bytes
Fixed disk[1]	20M bytes	20M bytes	44M, 70M bytes	44M, 70M, 115M bytes
Additional options			44M, 70M, 115M bytes	44M, 70M, 115M bytes
Base Price	$1,695	$3,595	$5,295	$6,995
Expansion slots[2]	3	3	7	7
Operating system(s)	PC-DOS 3.3	PC-DOS 3.3 and Operating System/2	PC-DOS 3.3 and Operating System/2	PC-DOS 3.3 and Operating System/2

[1] Model 30 also comes in a diskette-based configuration.

[2] Model 30 accepts most IBM PC and IBM PC XT option cards. Models 50, 60 and 80 accept new IBM Micro Channel option cards.

INFORMATION PROVIDED BY IBM
CW CHART

Connectivity

FROM PAGE 108

ture and brings both the PC Network and multiple interconnected networks under IBM's network management umbrella.

IBM also announced the PC 3270 Emulation LAN Management Program, which allows a PC 3270 Emulation gateway node to monitor remote Token-Rings and PC Networks for failures and report them.

Other connectivity enhancements include the ability to simultaneously run applications while communicating with other systems and support for a range of communications protocols and services, including 3270 DFT, Synchronous Data Link Control and asynchronous protocols.

What IBM did not introduce, as some had anticipated, was a single Token-Ring chip or 16M-bit Token-Ring board. IBM probably ran into difficulties reducing the chip set to one chip, observers said. Also, IBM seeks to prolong the life of its minicomputers and would rather not be in the network business, they added. George Colony, president of Forrester Research, Inc. in Cambridge, Mass., predicted that a faster Token-Ring board will be released in six months.

To the surprise of many observers, IBM announced DB2, the first application supported under its SAA architecture. "The fact that IBM [will deliver] so quickly on . . . SAA indicates the seriousness with which IBM takes [SAA]," Orion Group's Rampel said.

Computerworld Senior Editor Elisabeth Horwitt contributed to this story.

Add-on board makers scramble

Developers waste no time in producing second-generation IBM line

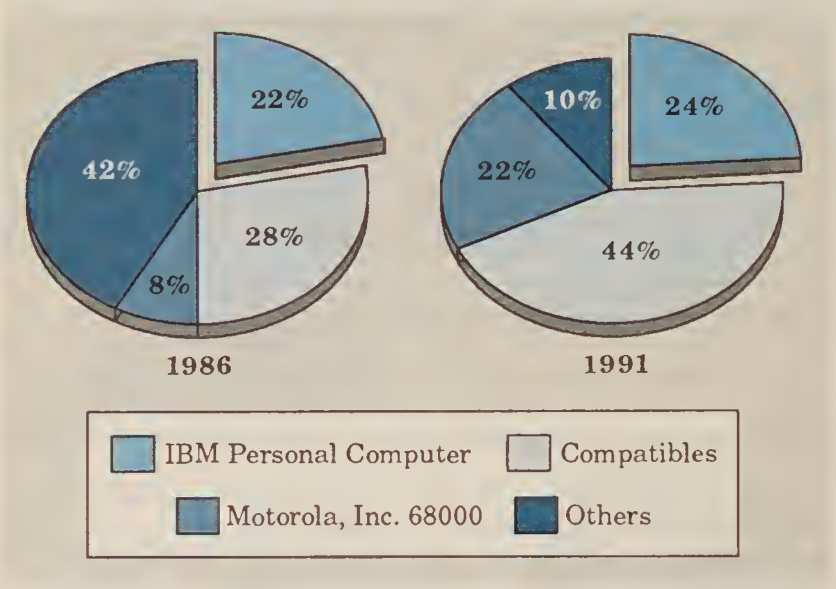
BY JAMES A. MARTIN
CW STAFF

Although the proprietary IBM Micro Channel bus included in the Personal System/2 series will not accommodate existing add-on boards, third-party developers say they are losing no time in producing a second generation of IBM-compatible devices. Furthermore, the card makers say that bargain hunting for older IBM Personal Computers and PC ATs may actually drive up demand for board-level devices.

Orchid Technology, Inc. in Fremont, Calif., said it will formally announce next week what it believes to be the first third-party add-on random-access memory (RAM) card for the Micro Channel machines, according to a spokesman.

IBM and compatibles increase domination

Microcomputer market share by shipments, 1986-1991



INFORMATION PROVIDED BY INTERNATIONAL DATA CORP.
CW CHART

Ramquest is a 2M-byte Lotus/Intel/Microsoft Expanded Memory Specification RAM card for the Personal System/2 computers and is to be the first of a series for Orchid, according to Michael Bruzzone, director of corporate communications for Orchid.

"We realized the high-end Personal System/2 would eventually require more memory, so we designed a 2M-byte memory expansion board," he added. Orchid plans to ship Ramquest in May. He said the company would not comment any further until the formal announcements next week.

Other microcomputer add-on board companies expressed relief and excitement at the IBM announcements.

"We're glad the announcements are finally out so we can now concentrate on developing products for these machines," said Safi Qureshey, president of AST Research, Inc.

The IBM Personal System/2 series still offers room for add-on products, but it will be up to third-party vendors to design and manufacture new products for the architecture, Qureshey said.

Thus, companies such as AST Research with strong research and development and manufacturing sectors will be able to capitalize on the Personal System/2 line, he added.

And because technology is constantly improving in price and performance, most users will ultimately find themselves at a disadvantage with built-in motherboard graphics like the ones on the Personal System/2 series, according to Robert Stamps, vice-president of sales and marketing for Quadram Corp.

'Far superior'

"The graphics industry is moving ahead with high-resolution boards up to 1,280 by 960 pixels with fast processors on-board," Stamps said. "This is the immediate future of graphics technology, and it's apparently far superior to IBM's announcements.

"The end-user community could opt for other options and more graphics resolution than what these machines offer," Stamps said. "If that's the case, the graphics board marketplace will continue to grow. But it's too early to determine the impact."

Meanwhile, demand will increase for the existing IBM PC XT and AT as prices drop, creating more opportunity for all enhancement board vendors, board makers said.

"Generally, when IBM closes one door, they tend to open another," said Rick Hunteman, director of marketing for STB Systems, Inc., a Dallas-based graphics-enhancement board company. Because microcomputer clone makers will rush to copy IBM's new Personal System/2 series and will look for enhancement-board manufacturers who can respond rapidly, STB stands to gain from IBM's proprietary strategy move.

"As a company, we are still projecting 50% growth in revenue this year, and IBM's announcement might allow us to grow even faster," Hunteman said. "We haven't locked ourselves into one manufacturer or one type of product, so we're in a good position."

Because Quadram offers a diverse product line, the company should not be adversely affected economically by the built-in subsystem features on the Personal System/2 series, Stamps said.

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INSIDE LINES

Parlez-vous? French sources say newly formed Honeywell Bull, Inc. is expected to make its first worldwide product announcement today. The venture of Honeywell Information Systems, NEC and lead partner Compagnie des Machines Bull is likely to expand the low-end of its DPS 7 minicomputer line with five new DPS 7000 models running under the company's proprietary GCOS 7 operating system. The DPS 7000 machine is attractively priced, starting at $116,395. Compared with the earlier Bull-made DPS 7/07 models, the five new DPS 7000s improve on the previous price/performance ratio by a factor of two, according to sources.

Let's not forget the kids. Help is on the way for IBM addicts who didn't get enough at last week's product blowout. Sources say IBM is expected to make an announcement targeting the educational market this week. The bundled offering is expected to include a low-end personal computer (either the new Intel 8086-based Model 30 or a new low-end machine), a Starlan version of IBM's PC Network and IBM Solutionpac software for the school market.

Presenting the bill. For users interested in using the Presentation Manager, the graphical component of IBM's OS/2, the hardware investment is somewhat substantial. "A monochrome monitor can't run the Presentation Manager, and with CGA, it doesn't look good," says Microsoft chairman Bill Gates, who suggests EGA and above.

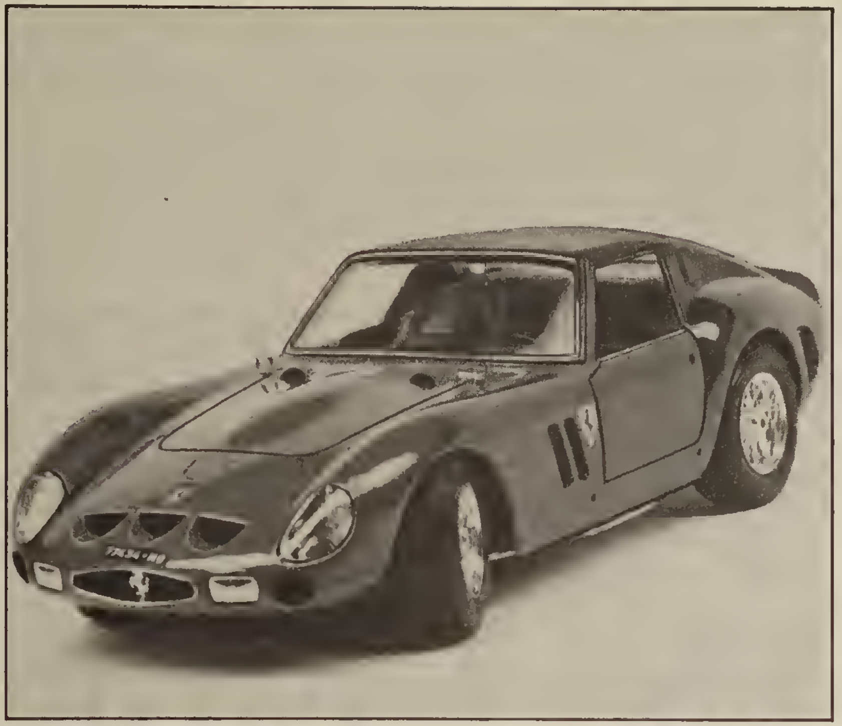
A blast from the past. With all the attention on MS-DOS, PC-DOS, OS/2, etc., Zilog has just released the Z280, a 16-bit CMOS microprocessor that supports the CP/M operating system. Z280 is an enhanced version of Zilog's 8-bit Z80 chip and can be used as a DOS coprocessor. But why a CP/M chip in the days of DOS? "It will be a hit in Japan, because there's so much software there built around the Z80," says Wayne Riccirdi, vice-president of marketing and sales.

Freelancers, give us a call. While we wait for Lotus to clean up its approach with The Networker, a networking implementation of 1-2-3 and Symphony, Lotus is also beta-testing a network version of Freelance, its presentation graphics package, that is optimized to work with 1-2-3.

Mike, track those frequent-flier bonuses. Unisys executives are logging hundreds of hours of flying time, commuting between dual headquarters facilities in Detroit and Blue Bell, Pa. And while former Sperry facilities look very inviting (a skyscraper on Sixth Ave. in Manhattan and a modern campus near Philadelphia), they're finding it hard to say goodbye to Detroit. Sources close to the company say that as Burroughs and Sperry operations merge, just as many managers are moving to the Detroit area as vice versa. And, notably, Unisys Chairman W. Michael Blumenthal has reportedly made an important promise to the Motor City's fathers. He is said to have told the Detroit Chamber of Commerce that Unisys won't pack up and leave the Burroughs headquarters building there anytime soon.

Taking cover. Lisp Machine, Inc. filed for protection from its creditors under Chapter 11 of the U.S. Bankruptcy Code last Monday. The company had reportedly raised almost $40 million in venture capital from several investors. Lisp makes machines designed to use the Lisp artificial intelligence computer language. The company had expanded faster than its rate of income could support, according to the firm's legal counsel.

The hit list. The U.S.-Japan trade dispute may wind up doubling the price of Japanese 16- and 32-bit computers, monitors, hard disk drives and magnetic tape. Those are the products on a preliminary hit list drawn up by U.S. officials, but the final, pared-down list is set to be announced April 17. The proposed 100% tariffs have certainly caught the attention of one of the targeted firms, Tokyo-based Hitachi. A Hitachi spokesman said the tariffs "would make exports of the products concerned virtually impossible. In view of the harsh business climate that has already arisen because of the high exchange rate of the yen, the effect on Hitachi's business activities would be very severe."



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Pre-shrunk.
Pre-fitted.
Pre-thunk.

When you buy a Ven-Tel modem, you buy 12 years of well thought out, innovative technology that's custom-tailored to your needs.

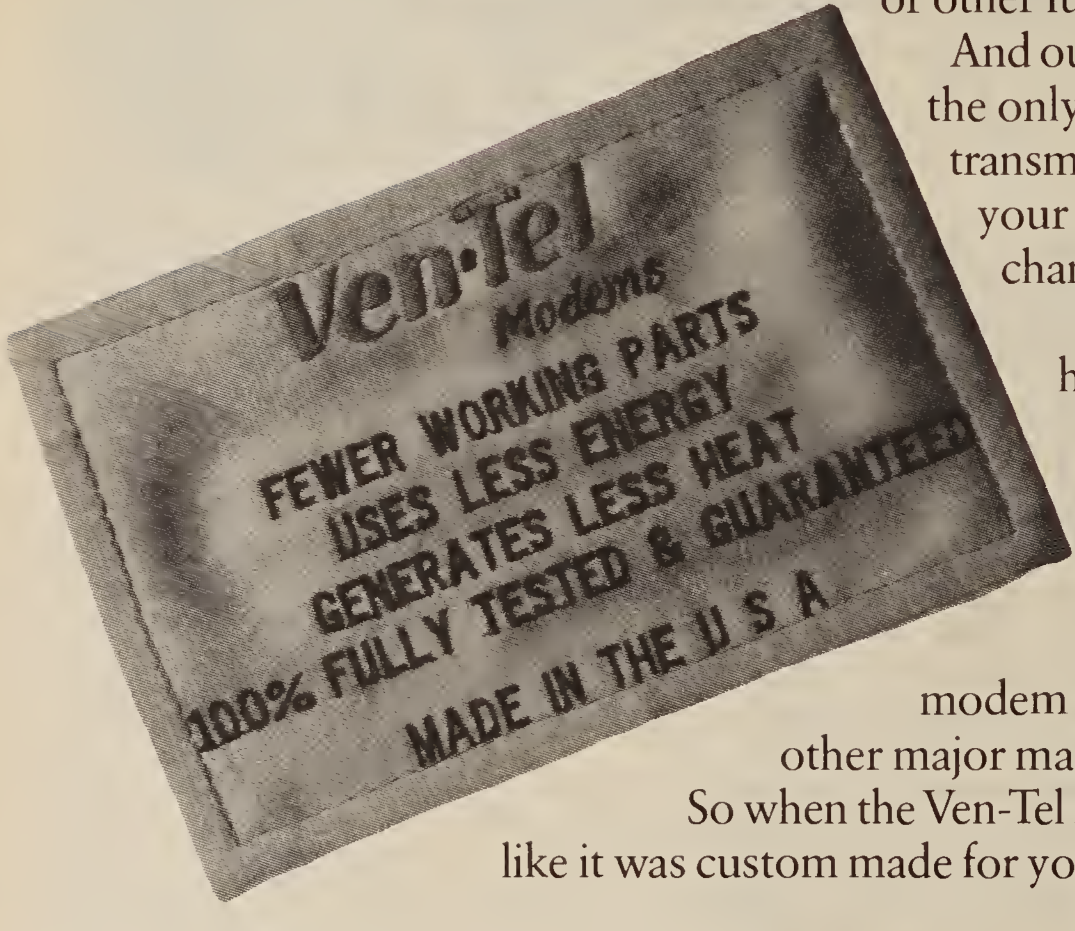
Like the PC Modem Half Card,™ the first modem ever shrunk to fit into a short slot, so you'd have another long slot for more memory or other functions.

And our "pre-fitted" 2400 baud modem—the only 2400 that lets you double your transmission speed *without* reconfiguring your PC, buying new software or changing switches.

Another thing: other modems have 300 or so working components, ours have 70. That means they use less energy and generate less heat—the main cause of PC malfunctions.

Even so, we back every Ven-Tel modem with a free *five-year* warranty. No other major manufacturer even comes close.

So when the Ven-Tel modem you buy off the shelf seems like it was custom made for your office, don't be surprised. It was.



Ven-Tel
Modems

Our free 24-page booklet, "How To Select The Correct Modem," contains specific information about our full line of modems. To request your copy, call 800-538-5121. In California, call 408-727-5721.